INSTALLATION AND MAINTENANCE MANUAL
FOR SEA TEL MODEL
ST14 SATELLITE TV RECEIVE-ONLY ANTENNA

Sea Tel, Inc. 4030 Nelson Avenue Concord, CA 94520 Tel: (925) 798-7979 Fax: (925) 798-7986 Web: : www.cobham.com\seatel	Sea Tel COBHAM	Sea Tel Europe Unit 1, Orion Industrial Centre Wide Lane, Swaythling Southampton, UK S0 18 2HJ Tel: 44 (0)23 80 671155 Fax: 44 (0)23 80 671166 Web: www.cobham.com\seatel

Sea Tel Inc is also doing business as Cobham Antenna Systems

September 26, 2011 **Document. No. 129981 Revision C**

Sea Tel Marine Stabilized Antenna systems are manufactured in the United States of America.

Sea Tel is an ISO 9001:2008 registered company.

Certificate Number 13690 issued March 14, 2011.

Copyright Notice

All Rights Reserved. The information contained in this document is proprietary to Sea Tel, Inc.. This document may not be reproduced or distributed in any form without the consent of Sea Tel, Inc. The information in this document is subject to change without notice.

Copyright © 2009 Sea Tel, Inc is doing business as Cobham SATCOM.

Revision History

REV	ECO#	Date	Description	By
A	N/A	June 17,2009	Initial production release.	ECM
B	N/A	June 29, 2010	Updated text and graphics to reflect current build/features.	ECM
C	N/A	September 26, 2011	Added DLA LNB Replacement Procedures	MDN

1. INSTALLATION 1-1
1.1. Site Selection and Cable Routing Path 1-1
1.2. Determine your Cables 1-2
1.3. Required Tools 1-3
1.4. Prepare the Antenna Radome mounting location 1-3
1.5. Prepare the Antenna Control Panel mounting location 1-3
1.6. Prepare the DiSEqC Switch mounting Locations (ST14D Only) 1-3
1.7. Prepare the Multiswitch mounting location (ST14D and ST14M w/ 3+ receivers) 1-3
1.8. Prepare the Satellite Receiver and Television mounting locations 1-3
1.9. Running the Cables for Model ST14 D: 1-4
1.9.1. Antenna Cable 1-4
1.9.2. IF Cables 1-4
1.9.3. Serial Cable 1-4
1.9.4. DC Power Cable 1-4
1.10. Running the Cables for Model ST14 M: 1-4
1.10.1. Antenna Cable 1-4
1.10.2. IF Cables 1-5
1.10.3. DC Power Cable 1-5
1.11. Running the Cables for Model ST14 E 1-5
1.11.1. Antenna Cable 1-5
1.11.2. Satellite Receiver IF Cable 1-5
1.11.3. DC Power Cable 1-5
1.12. Install the Antenna Radome 1-6
1.13. Install the Antenna Control Panel 1-11
1.14. Installing the Cables for Model ST14 D: 1-12
1.14.1. Antenna M&C 1-12
1.14.2. IF Cables 1-12
1.14.3. Serial Cable 1-13
1.15. Installing the Cables for Model ST14 M: 1-13
1.15.1. Antenna M&C 1-13
1.15.2. IF Cables 1-13
1.16. Installing the Cables for Model ST14 E 1-13
1.16.1. Antenna Cable 1-13
1.16.2. Satellite Receiver IF Cable 1-13
2. SETUP FOR MODEL ST14 D 2-1
2.1. System Checkout 2-1
2.2. Initial Factory Setup 2-1
2.3. Changing the Initial Factory Setup 2-1
2.3.1. Adjusting Panel Brightness 2-1
2.3.2. Threshold Offset 2-1
2.3.3. Targeting Mode Parameter Selection 2-1
2.3.4. Setting Threshold Offset for Proper Tracking 2-3
2.3.5. SAT1 - First Satellite Parameters 2-4
2.3.6. SAT2 - Second Satellite Parameters 2-7
2.3.7. SAT3 - Third Satellite Parameters 2-7
2.3.8. SAT4 - Fourth Satellite Parameters 2-7
2.3.9. SAT5 - Fifth Satellite Parameters 2-7

2.3.10. SAT6 - Sixth Satellite Parameters *2-7*
2.3.11. FACTORY SETTINGS *2-7*
2.4. SAVING THE SETUP PARAMETERS 2-11
3. SETUP FOR MODEL ST14M 3-1
3.1. SYSTEM CHECKOUT 3-1
3.2. INITIAL FACTORY SETUP 3-1
3.3. CHANGING THE INITIAL FACTORY SETUP 3-1
3.3.1. Adjusting Panel Brightness *3-1*
3.3.2. Threshold Offset *3-1*
3.3.3. Targeting Mode Parameter Selection *3-1*
3.3.4. Setting Threshold Offset for Proper Tracking *3-2*
3.3.5. SAT2 - Second Satellite Parameters *3-5*
3.3.6. SAT3 - Third Satellite Parameters *3-5*
3.3.7. SAT4 - Fourth Satellite Parameters *3-6*
3.3.8. SAT5 - Fifth Satellite Parameters *3-6*
3.3.9. SAT6 - Sixth Satellite Parameters *3-6*
3.3.10. FACTORY SETTINGS *3-6*
3.3.11. LON (Ships Longitude) *3-7*
3.4. SAVING THE SETUP PARAMETERS 3-10
4. SETUP FOR MODEL ST14E 4-1
4.1. SYSTEM CHECKOUT 4-1
4.2. INITIAL FACTORY SETUP 4-1
4.3. CHANGING THE INITIAL FACTORY SETUP 4-1
4.3.1. Adjusting Panel Brightness *4-1*
4.3.2. Setting Auto Threshold for Proper Tracking *4-1*
4.3.3. SATA - First Satellite Parameters *4-2*
4.3.4. SATB - Second Satellite Parameters *4-7*
4.3.5. SATC - Third Satellite Parameters *4-7*
4.3.6. FACTORY SETTINGS *4-7*
4.4. SAVING THE SETUP PARAMETERS 4-8
5. MAINTENANCE 5-1
5.1. WARRANTY INFORMATION 5-1
5.2. WHO TO CONTACT FOR REPAIRS 5-1
5.3. REPLACING AN LNB 5-2
5.4. PREVENTIVE MAINTENANCE 5-4
5.5. FAULT ISOLATION/TROUBLE-SHOOTING 5-4
6. ST 14 TECHNICAL SPECIFICATIONS 6-1
6.1. INSTALLED WEIGHT 6-1
6.2. RADOME 6-1
6.3. ANTENNA C14(M/D)/ST14(M/D) 6-1
6.4. ANTENNA C14E/ST14E 6-1
6.5. STABILIZED PEDESTAL 6-1
6.6. US CIRCULAR LNB 6-2
6.7. DISHPRO CIRCULAR LNB 6-2
6.7.1. European Single Universal Linear LNB *6-2*
6.7.2. Pedestal Control Unit *6-3*
6.7.3. DVB Compliant Tracking Receiver *6-3*

6.8. POWER REQUIREMENTS 6-3
6.9. ENVIRONMENTAL 6-3
7. COMPUTER INTERFACE 7-1
7.1.1. Programming Instructions Coastal Series Pedestal Control Unit 7-3
8. DRAWINGS 8-1
8.1. ST 14 DRAWINGS 8-1

THIS PAGE INTENTIONALLY LEFT BLANK

1. Installation

Installation of your ST-14(D/E/M) Antenna system must be accomplished by or under the supervision of an authorized Sea Tel dealer for the Sea Tel Limited Warranty to be valid and in force. Good planning of the installation will provide the best results. Below is some guidance on issues that are important to consider when planning the installation.

Planning is the key to a good installation. Read the installation information below thoroughly before beginning the actual installation. Then review your plan to adjust for any details that may have been overlooked.

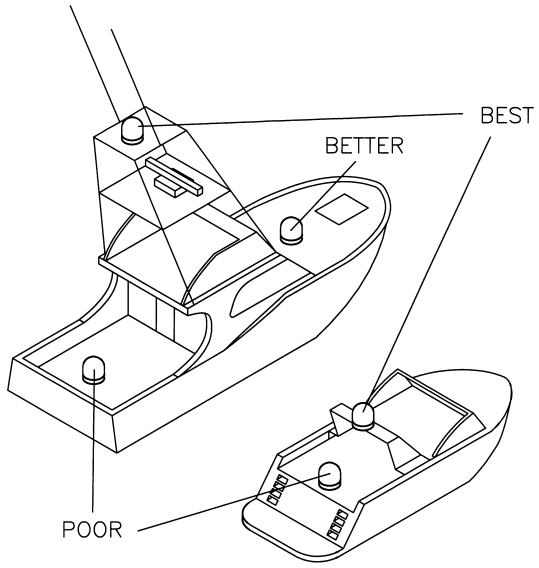
A full scale Installation Template (drawing 126355) has been provided to locate the cutout areas and mounting holes for the antenna radome and for the antenna control panel. The radome template section of the drawing includes the outer perimeter of the radome base so you can insure that the radome will fit in the area chosen.

1.1. Site Selection and Cable Routing Path

The best mounting location for the antenna radome assembly is where:

1. The antenna has a clear line-of-sight view to as much of the sky as is practical. Choose a location where masts or other structures do not block the satellite signal from the dish as the boat turns.
2. The antenna is at least 5 feet away from other transmitting antennas (HF, VHF and radar) that may generate signals that may interfere with the Coastal Series antenna. The further away the Coastal antenna is from these other antennas, the less impact their operation will have on it.
3. The antenna radome assembly should be rigidly mounted to the boat. If necessary, reinforce the mounting area to assure that it does not flex due to the boat motion or vibration.

Choosing the best mounting location on smaller boats, where there are fewer possible locations to choose from, is frequently a compromise. The Figure shown to the right is provided to make some location comparisons. The "poor" location is poor because over half of the antenna's viewable sky is blocked by the overhang above it. The "better" location has fewer blockages, but the upper deck and the mast will cause some blockage when the antenna is at lower elevations. The "best" location has no blockage from raised platforms, mast or the body of the radar.

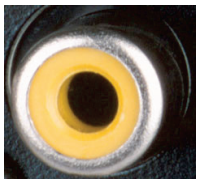


Possible Antenna Radome Assembly mounting locations

If enclosed in a cabinet or panel, assure that there is adequate airflow to prevent from over-heating and provide forced airflow if needed.

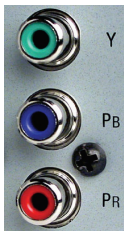
1.2. Determine your Cables

In addition to the required Coaxial cable that will interconnect the above decks equipment with the below decks equipment, you will need to determine what cables are going to be used to interconnect satellite receivers to the televisions and if installed the surround sound system. The below guide may be used to help determine which cable type is best suited for your installation. You should also refer to the manual of the CFE equipment for additional guidance.

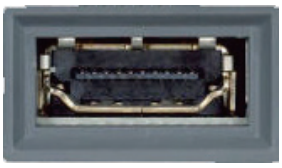
<table>
<tr><th>Video Connection Reference</th><th>Audio Connection Reference:</th></tr>
<tr><td>OK: Composite Video (Non-HD Video Only)
 
Typically an RCA Jack, this type of connection combines and transmits chrominance and luminance information on a single cable.</td><td>OK: Stereo RCA (2 channel Analog)

These RCA Jack connections are a means of passing analog line-level audio signals (split into left and right channels) from the satellite receiver to your television or audio amplifier.</td></tr>
<tr><td>Good: S-Video (Non HD Video Only)

S-video connections transmit the chrominance (color) and luminance (brightness) portions of a video signal along different paths, allowing them to be processed separately.</td><td>Good: RCA (Multi-Channel Analog)

These preamp-level analog inputs features jacks for up to 8 channels: left front, right front, center channel, left surround, right surround, and subwoofer. Because the subwoofer channel carries a limited range of frequencies, it's the ".1" in 5.1. A 6.1 input features the same jacks as a 5.1 input, but adds a back surround jack. A 7.1 input adds two back surround jacks.</td></tr>
<tr><td>Better: Component (HD Video Only)
 

This 3-cable connection allows the chrominance (color) and luminance (brightness) portions of a video signal to be processed separately .S-Video works similarly, but component video improves color accuracy further by splitting the chrominance signal into two portions.</td><td>Better: XLR (Hi Resolution Analog)

XLR audio connections are used primarily with high-performance audio gear. This 3 pin connector dedicates one of these pins for ground which helps reduce electronic noise throughout the cable. A clasp built into the round XLR plug locks it tightly into the socket, ensuring a secure connection even during full ships motion.</td></tr>
<tr><td colspan="2">Best: HDMI (Both HD Video and Digital Audio)
 
HDMI is a multi-pin connection used for passing standard- and high-definition digital video signals, as well as up to 8 discrete digital audio channels, through a single cable.</td></tr>
</table>

1.3. Required Tools

The following tools will be required to install the ST14:

1. Masking tape
2. Center punch
3. Hammer
4. Electric Drill
5. 7mm Drill Bit
6. 1" hole saw
7. Small hand or electric saber saw
8. 10mm Socket Wrench or Nut Driver
9. 10mm Open-end Wrench
10. 1/8" straight blade screwdriver
11. T-20 Torx screwdriver

1.4. Prepare the Antenna Radome mounting location

1. Lay the Installation Template (drawing 126355) on the mounting surface location that you have chosen to mount the radome on.
2. Align the radome "bow" mark on the template to be parallel to the bow of the boat. By default the orientation of the "Sea Tel" logo is oriented towards BOW. Adjust the position of the "Bow" marker on template to orient the LOGO where you want it. When you are satisfied with the position, tape the template in place.
3. Using the center punch and hammer, mark the locations of the four radome mounting holes and the cable passage. Remove the template drawing.
4. Drill the four radome mounting holes using a 7mm drill bit and the cable passage hole using the 1" hole saw.

1.5. Prepare the Antenna Control Panel mounting location

1. Lay the Installation Template (drawing 126355) on the mounting surface location that you have chosen to mount the Antenna Control Panel in.
2. Adjust the position of the template to center the Antenna Control Panel cutout portion of the drawing where you want it. When you are satisfied with the position tape the template in place.
3. Using the center punch and hammer, mark the locations of the four mounting holes and the four corners of the cutout area. Remove the template drawing.
4. Mark the perimeter of the cutout area. Drill a hole inside the perimeter of the cutout area to enable you to cut the area out with the saw (the 1" hole saw might be used for this).
5. Cut the area out.

1.6. Prepare the DiSEqC Switch mounting Locations (ST14D Only)

Prepare the mounting locations for the DiSEqC Switches. One switch assembly is required for each receiver that will be installed. If you are installing multiple receivers one of these switches must be designated as the Master DiSEqC Switch.

1.7. Prepare the Multiswitch mounting location (ST14D and ST14M w/ 3+ receivers)

Prepare the mounting location for the Multiswitch to be installed. Refer to the manufactures manual for actual mounting dimensions and any other applicable installation instructions.

1.8. Prepare the Satellite Receiver and Television mounting locations

Prepare the mounting locations for the satellite receiver(s) and television set(s) (or monitor and stereo sound system).

1.9. Running the Cables for Model ST14 D:

1.9.1. Antenna Cable

Route the "F" connector end of the antenna cable down from the radome mounting location through the boat to the antenna control panel location.

Adjust the cable routing so that about 12 inches (30.5cm) of cable extends beyond the radome mounting surface and about 4 inches (10cm) of cable extending out of the antenna control panel mounting surface.

1.9.2. IF Cables

1.9.2.1. ACP to Multiswitch

Route the receiver IF cable from the antenna control panel location to the Multiswitch mounting. Leave about 4 inches (10cm) of cable extending out of the antenna control panel mounting surface.

1.9.2.2. Multi-Switch to Master DiSEqC Switch

Route the IF cables from the Multiswitch mounting location to the Master DiSEqC Switch location. Leave about 4 inches (10cm) of cable extending out of each mounting location.

1.9.2.3. Master DiSEqC Switch to receiver

Route the IF cables from the Master DiSEqC Switch mounting location(s) to master satellite receiver mounting location. Leave about 4 inches (10cm) of cable extending out of each mounting location.

You are required to install (in series between the Multiswitch & Receiver) one DiSEqC Switch assembly for every satellite receiver installed on the network. Perform 1.9.2.3.1 and 1.9.2.3.2 below only if you are installing multiple receivers.

1.9.2.3.1. Multi-Switch to Slave DiSEqC Switch (multiple receiver)

Route the IF cables from the Multiswitch mounting location to each of the slave DiSEqC Switch mounting locations. Leave about 4 inches (10cm) of cable extending out of each mounting location.

1.9.2.3.2. Slave DiSEqC Switch to receiver (multiple receiver)

Route the IF cables from the Master DiSEqC Switch mounting location(s) to each of the slave satellite receiver mounting locations. Leave about 4 inches (10cm) of cable extending out of each mounting location.

1.9.3. Serial Cable

Route the RS232 DC Power Cable from the antenna control panel location to the Master DiSEqC switch mounting location. Coil and secure the cable while leaving about 4 inches (10cm) of cable extending out at both mounting locations.

1.9.4. DC Power Cable

Route the DC Power Cable from the antenna control panel location to the +11-16 Volt DC Power source. Leave about 4 inches (10cm) of cable extending out of the antenna control panel mounting surface.

1.10. Running the Cables for Model ST14 M:

1.10.1. Antenna Cable

Route the "F" connector end of the antenna cable down from the radome mounting location through the boat to the antenna control panel location.

Adjust the cable routing so that about 12 inches (30.5cm) of cable extends beyond the radome mounting surface and about 4 inches (10cm) of cable extending out of the antenna control panel mounting surface.

1.10.2. IF Cables

1.10.2.1. ACP to DeStacker

Route the receiver IF cable from the antenna control panel location to the DeStacker mounting location. Leave about 4 inches (10cm) of cable extending out of each mounting location.

1.10.2.1.1. DeStacker to Receiver (1-2 receiver setup only)

Route the IF cable(s) from the DeStacker location to the satellite receiver location(s). Leave about 4 inches (10cm) of cable extending out of each mounting location.

1.10.2.1.2. DeStacker to Multiswitch (3+ receiver setup only)

Route the IF cable from the DeStacker mounting location to the Multiswitch mounting location. Leave about 4 inches (10cm) of cable extending out of each mounting location.

1.10.2.1.3. Multi-Switch to receiver (3+ receiver setup only)

Route the IF cables from the Multiswitch mounting location to each of the satellite receivers. Leave about 4 inches (10cm) of cable extending out of each mounting location.

1.10.3. DC Power Cable

Route the DC Power Cable from the antenna control panel location to the +11-16 Volt DC Power source. Leave about 4 inches (10cm) of cable extending out of the antenna control panel mounting surface.

1.11. Running the Cables for Model ST14 E

1.11.1. Antenna Cable

Route the "F" connector end of the antenna cable down from the radome mounting location through the boat to the antenna control panel location.

Adjust the cable routing so that about 12 inches (30.5cm) of cable extends beyond the radome mounting surface and about 4 inches (10cm) of cable extending out of the antenna control panel mounting surface.

1.11.2. Satellite Receiver IF Cable

Route the receiver IF cable from the antenna control panel location to the satellite receiver mounting location. Leave about 4 inches (10cm) of cable extending out of the antenna control panel mounting surface.

1.11.3. DC Power Cable

Route the DC Power Cable from the antenna control panel location to the +11-16 Volt DC Power source. Leave about 4 inches (10cm) of cable extending out of the antenna control panel mounting surface.

1.12. Install the Antenna Radome

Refer to the Installation Arrangement drawing for mounting dimensions of the radome assembly. Note that the Antenna Radome installation procedure are identical for all ST14 Series Systems. Before performing this procedure, verify all of the system contents with the packing list provided with the shipment.

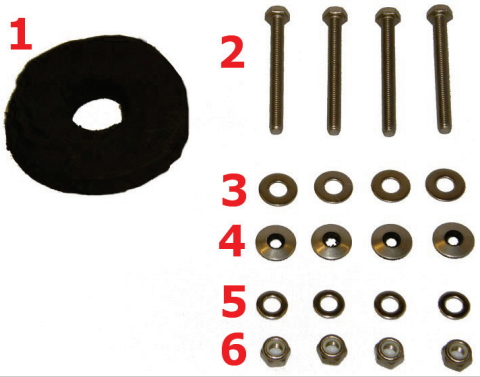
Figure 1 ST14M Antenna System

Figure 2 ST14D Antenna System

Figure 3 ST14E Antenna System

Open the Radome Installation Hardware Kit, which should include the following items:

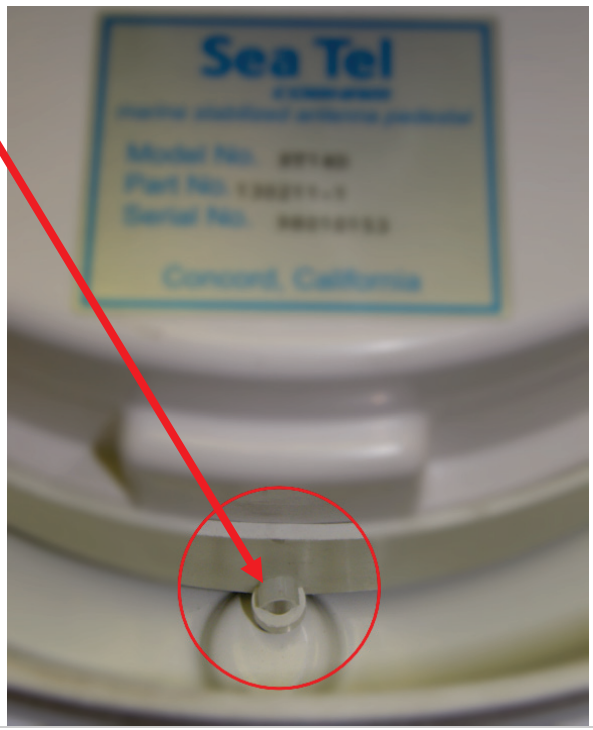
1. Radome Mounting Pad
2. 6mm Mounting bolts
3. 6mm Flat Washer
4. 6mm Neoprene Flat Washer
5. 6mm Small OD Flat Washer
6. 6mm Nyloc Nut
1.



Using a #2 Phillips Head Screw driver, remove the 3 screws (270˚ spacing apart from each other) that secure the radome top to the radome base.

Set the hardware and radome top aside in a safe location until you are ready to close the radome.

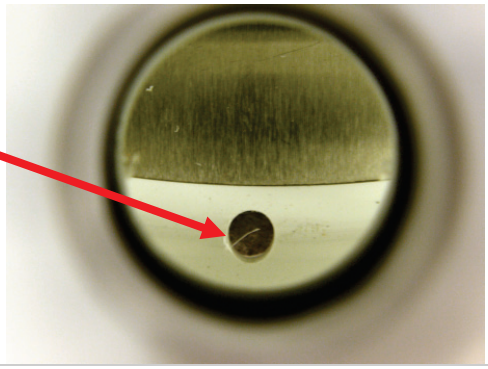
Locate and remove the Azimuth Lock-Down Pin by pulling it straight out. Retain and store this hardware for future use.



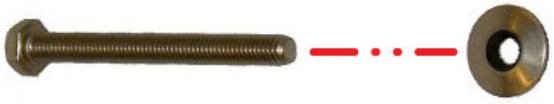
Using your hand, rotate the antenna in azimuth to align an access hole with a threaded metal radome base mounting insert.

NOTE: The Radome Base contains weep holes to allow any water that potentially may enter radome to weep out. Do not confuse these radome "weeping" holes with the actual mounting inserts. Exercise caution as to not allow anything, including the mounting surface, to block these weep holes.

A failure to comply with this may result in the accumulation of standing water.



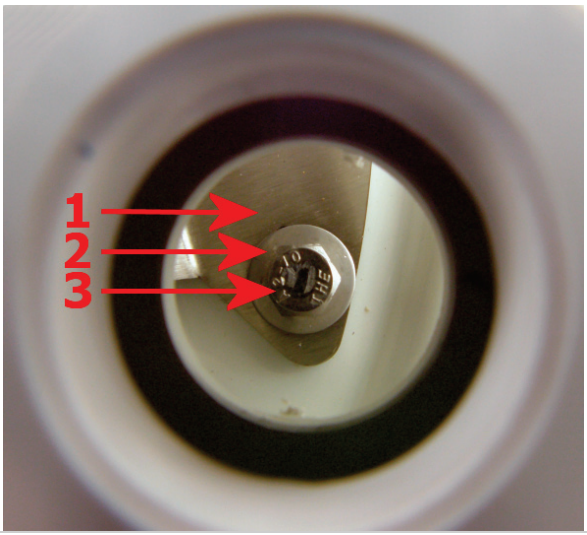
Thread the 6mm bolt through a bonded washer (neoprene side down) and through one of the threaded inserts in the base of the radome.



Using a 10mm Socket, Install and tighten an M6 Bolt through the threaded insert to approximately 7.5 to 9 ft-lbs.

2.

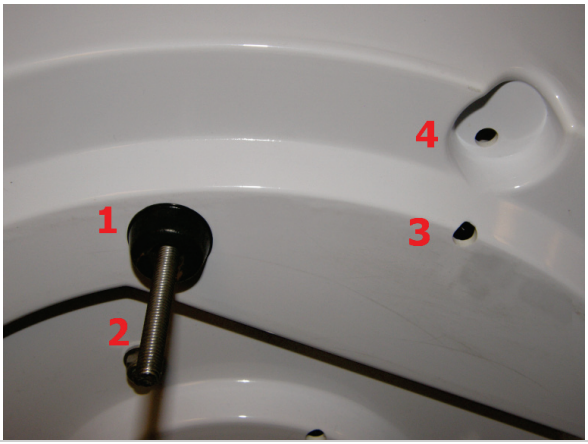
1. Threaded metal insert
2. Neoprene washer
3. M6 Bolt

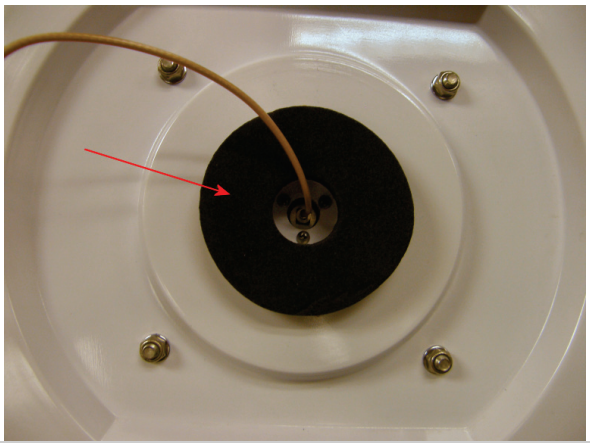
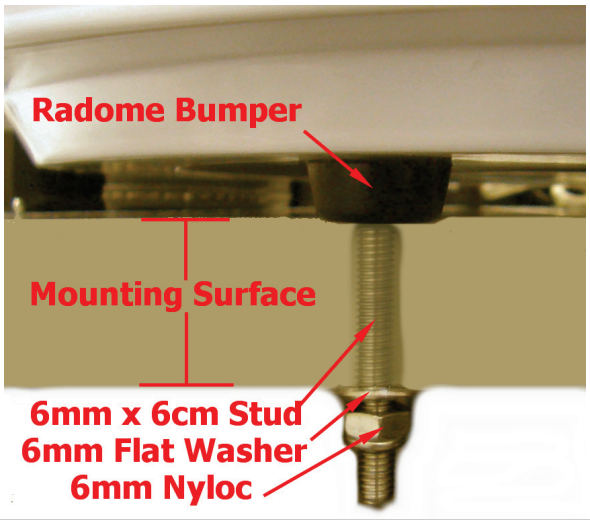


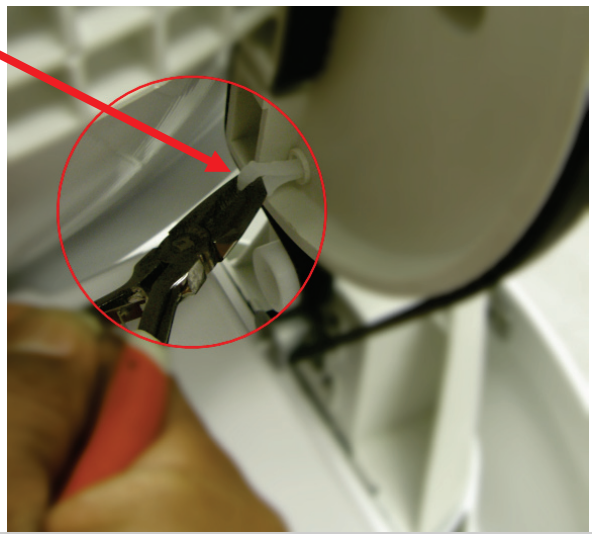
Rotate the antenna in azimuth and repeat for the three remaining mounting bolts, tightening all four of the required mounting bolts to approx 7.5 to 9 ft-lbs.

Reference picture showing one of the four mounting bolts protruding from radome base and through the mounting feet.

1. Radome Base Feet
2. Mounting Bolt
3. Weep Hole
4. Azimuth Lockdown Hole



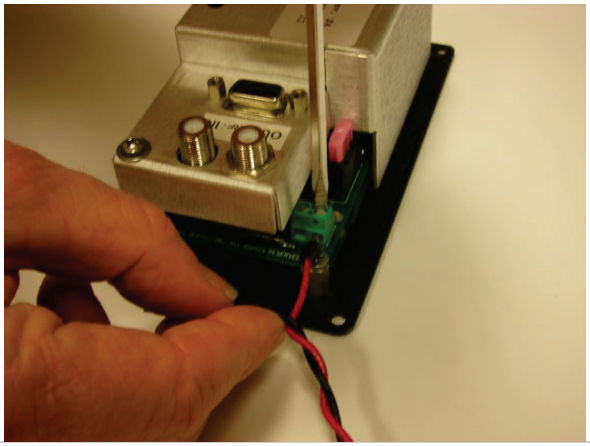
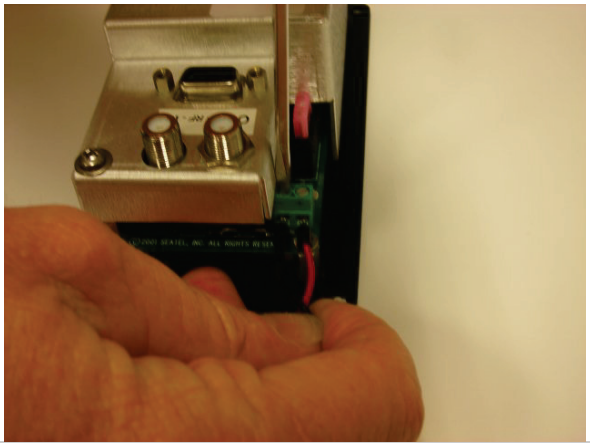
3. Remove the paper backing from the rubber mounting pad.	
Lift the base of the radome up and install the radome mounting pad as shown to the right..	
Lift the base of the radome up and connect the antenna cable to the base of the antenna. Set the radome base mounting bolts into the mounting holes, Be careful not to pinch or kink the antenna cable exiting through the center of the radome base,	
From the underside of the mounting surface, install a M6 flat washer and a nylon lock nut on each of the mounting bolts. Tighten all four of the nuts.	

Locate and using needle nose pliers, remove the elevation stop pin. Retain and store this hardware for future use.	
By hand rotate the reflector from Horizon (0˚ Elevation) to Zenith (90˚ Elevation) to ensure full range of motion with no physical obstructions.	

By hand, rotate the antenna in Azimuth 360˚to ensure full range of motion with no physical obstructions.	

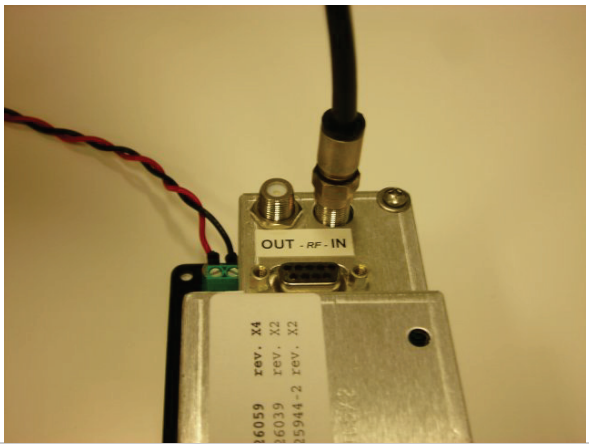
1.13. Install the Antenna Control Panel

Refer to the Installation Arrangement drawing.

Assure that the DC Power Cable is not connected to the DC Supply. 1. At the antenna control panel, connect the red wire to the + (plus) terminal on the green screw terminal.	
2. Connect the black wire to the - (minus) terminal on the green screw terminal.	

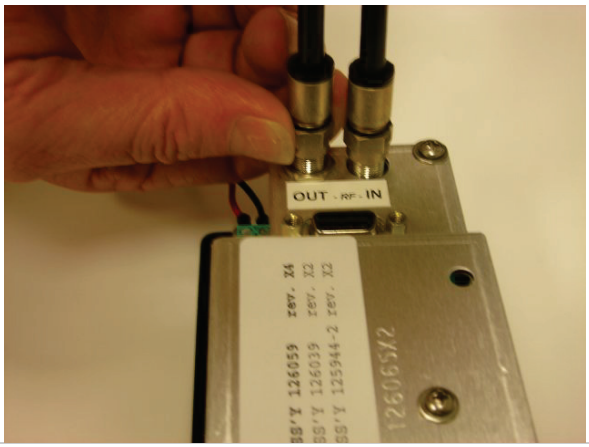
3. Connect the antenna cable to the IN connector of the antenna control panel. This IN connection supplies 30VDC operating voltage and antenna control signals to the antenna and receives satellite signal from the antenna.

CAUTION: Connecting the satellite receiver to the IN connector may damage the satellite receiver.



4. Connect the receiver cable to the OUT connector of the antenna control panel.

CAUTION: Connecting the satellite receiver to the IN connector may damage the satellite receiver.



5. Install the antenna control panel into the cutout and secure with self tapping screws
6. At the DC Power Supply, connect the red wire to the plus voltage output terminal. Connect the black wire to the minus (or ground) output terminal.

1.14. Installing the Cables for Model ST14 D:

1.14.1. Antenna M&C

Connect the antenna cable to the antenna control panels "RF IN" port.

1.14.2. IF Cables

1.14.2.1. ACP to Multiswitch

Connect the ACP's "RF OUT" Port to the 18Vdc input port of the Multiswitch.

1.14.2.2. Multi-Switch to Master DiSEqC Switch

Connect an available output Port of the Multiswitch to the Splitter/Multiswitch port of the Master DiSEqC Switch.

1.14.2.3. Master DiSEqC Switch to receiver

Connect the Receiver (SAT IN) port of the Master DiSEqC Switch to the Satellite In port of the master satellite receiver.

It is *this* Master DiSEqC Switch connection that will pass the required satellite target commands from the master receiver to the Antenna via the ACP serial port based on the users channel selection.

1.14.2.3.1. Multi-Switch to Slave DiSEqC Switch (multiple receivers)

Connect an available output port of the Multiswitch to the Splitter/Multiswitch port of a Slave DiSEqC Switch. Repeat as required for each switch installed.

1.14.2.3.2. Slave DiSEqC Switch to receiver (multiple receivers)

Connect the Receiver (SAT IN) port of a Slave DiSEqC Switch to the satellite in port of a slave satellite receiver. Repeat as required for each receiver installed.

1.14.3. Serial Cable

Connect and secure the RS232 Serial Cable from the ACP serial port to the Master DiSEqC switch's serial port labeled M&C to ACP/DAC.

1.15. Installing the Cables for Model ST14 M:

1.15.1. Antenna M&C

Connect the antenna cable to the antenna control panels "RF IN" port.

1.15.2. IF Cables

1.15.2.1. ACP to DeStacker

Connect the ACP's "RF OUT" Port to the Stacked DBS + Antenna input of the DeStacker.

1.15.2.1.1. DeStacker to Receiver (1-2 receiver setup only)

Connect and secure "RCVR1" to the "SAT IN" port of a satellite receiver.

Connect and secure "RCVR2" to the "SAT IN" port of a secondary satellite receiver

1.15.2.1.2. DeStacker to Multiswitch (3+ receiver setup only)

Connect and secure the "RCVR1" port of the DeStacker to the Horizontal (+13Vdc) input port of the active Multiswitch.

Connect and secure the "RCVR2" port of the DeStacker to the Vertical (+18Vdc) input port of the active Multiswitch.

1.15.2.1.3. Multi-Switch to Receiver (3+ receiver setup only)

Connect and secure an available output port of the active matrix switch to the "SAT IN" port of a satellite receiver.

Repeat as required for all installed satellite receivers.

1.16. Installing the Cables for Model ST14 E

1.16.1. Antenna Cable

Connect the antenna cable to the Antenna Control Panel's "RF IN".

1.16.2. Satellite Receiver IF Cable

Connect ACP's "RF OUT" port to the "SAT IN" port of a satellite receiver.

THIS PAGE INTENTIONALLY LEFT BLANK

2. Setup for Model ST14 D

Use this chapter to setup the Model ST14D (**DiSEqC**)

2.1. System Checkout

1. Press the **POWER** key on the antenna control panel. The display should report model and software versions, verifying the DC power connection between the antenna control panel and the antenna pedestal assembly.
2. Turn power ON to the satellite receiver and the TV monitor. The television may now be displaying "searching for satellite signal" verifying proper video connections between the receiver and the monitor.

2.2. Initial Factory Setup

Your system comes from the factory preprogrammed for the following satellites:

SAT1	DTV 101 W	DirecTV 101 W
SAT2	DTV 110 W	DirecTV 110 W
SAT3	DTV 119 W	DirecTV 119 W
SAT4	Dsh 110 W	Dish Network 110 W
SAT5	Dsh 119 W	Dish Network 119 W
SAT6	EMPTY	No Selected Service

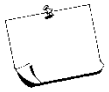
If you want to change this programming refer to the paragraphs below.

2.3. Changing the Initial Factory Setup

If you want to change the order of the initial setup of satellites, remove unused satellites or add/replace with new satellites then refer to the paragraphs below.

Press and hold **SAVE** + ▼ for 6 seconds to access SETUP Mode. "Setup Mode" will be displayed on the first line of the display while the panel is in SETUP Mode.

Use the ▼ & ▲ arrow keys to scroll down & up through the Setup parameters listed below.



NOTE: *You will save individual set-up parameter settings as you modify them in the procedure below (quick presses of the SAVE key). These will only save the settings until POWER is cycled to the antenna.*

When you are finished making all of your desired changes, you ***MUST press and hold the SAVE key for six seconds, "Settings Saved" will be displayed.*** Saving writes all of the parameters, including the ones you have changed, to memory in the PCU so they will be available after POWER has been cycled to the antenna.

2.3.1. Adjusting Panel Brightness

1. Press the **NEXT** key to select this parameter for adjustment.
2. Once selected, press ▲& ▼ arrow keys to adjust the backlighting illumination of the display to desired level. Each key press steps the value 8 counts.
3. Then press the **SAVE** key to save the adjusted setting.
4. Press the ▼ arrow key to go to the next parameter.

2.3.2. Threshold Offset

This displays the current Threshold Offset value. This parameter is automatically set based on the vessel's GEO location. See "Latitude Ranges" later in this chapter for configuration and setup information.

2.3.3. Targeting Mode Parameter Selection

The ST-14D TVRO antenna system is fitted with both hardware and software to support the use of **DiSEqC** (***Di****gital* ***S****atellite* ***Eq****uipment* ***C****ontrol*) commands. The use of these commands allows an integrated EchoStar

DishPro or DishPro Plus Satellite Receiver to determine and target the correct satellite based on the operators channel selection. For integrated Receivers that do support DiSEqC, the ST-14 requires that the user press the **NEXT** key to determine and target the desired satellite. The Targeting Mode Parameter selection allows the user to configure the systems mode of satellite targeting selection. The user will be presented with the option of manual satellite targeting (legacy mode) or one of 4 auto satellite targeting modes.

1. Press the **NEXT** key to SELECT this parameter for adjustment.
2. Once selected, press ▼ & ▲ arrow keys to scroll through a list of choices. The current mode choices and their descriptions are as follows:

- **MANUAL TARGET**:

  Intended Use:

  Single Satellite tracking requirement

  Description:

  By selecting this mode of manual operation the antenna will not automatically target any satellite preset regardless of any received commands by the satellite receiver to do so. In this mode the user is required to manually target the desired satellite by pressing the **NEXT** key to select the appropriate Preset (i.e. SAT 2) and allowing the satellite receiver to select receive polarity based on the current channel selection.

- **EchoStar: 2 SAT**:

  Intended Use:

  Two EchoStar Satellite tracking requirement

  Description:

  By selecting this mode of automatic operation the antenna will automatically select the correct receive polarity and satellite switching between SAT 1 and SAT 2 as commanded by an EchoStar compatible DishPro or DishPro Plus receiver using DiSEqC protocol.

- **EchoStar: 3 SAT**:

  Intended Use:

  Three EchoStar Satellite tracking requirement

  Description:

  By selecting this mode of automatic operation the antenna will automatically select the correct receive polarity and satellite switching between SAT 1, SAT 2, and SAT 3 as commanded by an EchoStar compatible DishPro or DishPro Plus receiver using DiSEqC protocol.

- **EchoStar: 4 SAT**:

  Intended Use:

  Four EchoStar Satellite tracking requirement

  Description:

  By selecting this mode of automatic operation the antenna will automatically select the correct receive Automatic polarity and satellite switching between SAT 1, SAT 2, SAT 3, and SAT4 as commanded by an EchoStar compatible DishPro or DishPro Plus receiver using DiSEqC protocol.

In North America, both Dish Network and Bell TV use EchoStar Satellites and EchoStar (DishPro and DishPro Plus) receivers and equipment. The DishPro system uses DiSEqC commands to select desired satellite(s) and receive polarity.

The following table serves as a guide to help properly setup your ST-14. Contact your (prospective) Service Provider to define which satellite(s) are required which is normally based on your service subscription.

Service Provider	Satellites Required	Target Mode Parameter	SAT 1 Preset	SAT 2 Preset	SAT 3 Preset	SAT 4 Preset	SAT 5 Preset	SAT 6 Preset
Generic	1-6	Manual	As required by service provider	As required by service provider or EMPTY if not required	As required by service provider or EMPTY if not required	As required by service provider or EMPTY if not required	As required by service provider or EMPTY if not required	As required by service provider or EMPTY if not required
Dish Network	1	Manual	As required by service provider	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY
Dish Network	2	EchoStar 2 SAT	Dsh119	Dsh110	EMPTY	EMPTY	EMPTY	EMPTY
Dish Network	3	EchoStar 3 SAT	Dsh119	Dsh110	Dsh129 or 61W	EMPTY	EMPTY	EMPTY
Dish Network	4	EchoStar 4 SAT	Dsh119	Dsh110	Dsh129 or 61W	Dsh129 or 61W	EMPTY	EMPTY
Bell TV	1	Manual	As required by service provider	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY
Bell TV	2	EchoStar 2 SAT	ExpV91	ExpV82	EMPTY	EMPTY	EMPTY	EMPTY

2.3.4. Setting Threshold Offset for Proper Tracking

To allow for a variance in AGC delta as a vessel travels from north to south or vice versa, the antenna system will automatically calculate the tracking threshold based on one of three pre-determined latitude ranges, "Lower, Middle, Upper", and their programmed Threshold Offset Parameter. These three ranges are defined by two adjustable system parameters known as "LOW LAT LIM" and "HIGH LAT LIM". The Threshold-Offset Parameter values associated with these ranges are based on an internal lookup table known as the "LAT-THRESH OFFSET TABLE". Although set at the factory this table is fully adjustable, either from the ACP or through the RS-232 serial interface, based on user preference.

Range	Region Set	Limitation Parameter	Factory Default	Offset Parameter	Factory Default
Lower	0˚ to LOW LAT LIM	LOW LAT LIM	35	THRSH OFFS_1	80
Middle	LOW LAT LIM to HIGH LAT LIM	Defined by LOW LAT LIM & HIGH LAT LIM	35.1 to 44.9	THRSH OFFS_2	60
Upper	HIGH LAT LIM to 90˚	HIGH LAT LIM	45	THRSH OFFS_3	30

2.3.5. SAT1 - First Satellite Parameters

Access all of the SAT1 individual parameters via a sub menu. Choices are:

2.3.5.1. PRESET

This choice presets all of the other sub-menu parameters to factory defaults for the satellite you choose to set this SAT to.

1. Press the **NEXT** key to select this parameter for adjustment.
2. Once selected, press ▼ & ▲ arrow keys to scroll through a list of choices which this SAT can be preset to. This list may change in future software revisions. The current choices are:

Empty	Blanks/zeroes all parameters for this satellite, so switching satellites (NEXT) will skip over the satellites you don't want (*if you only use ONE satellite, you should preset all of the other SAT selections to be empty/blank*).
ExpV82	Bell ExpressVu @ 82W
ExpV91	Bell ExpressVu @ 91W
DTV 72	DirecTV @ 72W
DTV101	DirecTV @ 101W
DTV110	DirecTV @ 110.1W
DTV119	DirecTV @ 119W
Dish61	Dish Network @ 61W
Dish73	Dish Network @ 73W
Dish77	Dish Network @ 77W
Dsh110	Dish Network @ 110W
Dsh119	Dish Network @ 119W
Dsh129	Dish Network @ 129W
Dsh148	Dish Network @ 148W

3. When the desired choice is displayed, press the **SAVE** key to save the parameters for this SAT. This saves the ***DEFAULT*** Satellite Name, Satellite Longitude, RHCP frequency, Baud rate, FEC rate, and Network ID of this SAT.
4. If you want to edit any of the ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
5. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

2.3.5.2. NAME

Enter or edit the 6 character ***Name*** you want to use for this saved satellite.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the leftmost character. Press ▼ & ▲ arrow keys to increment/decrement this character.
3. Press the **NEXT** key to move the cursor to the next character to the right. Press ▼ & ▲ arrow keys to increment/decrement this character.
4. Continue editing characters (6 max) until all desired characters have been set to create the NAME you want to use for this satellite selection. Press the **SAVE** key to save the NAME parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

2.3.5.3. LON

Enter or edit the ***Longitude*** position of this satellite. Range of acceptable values are 0-180, East or West (E or W).

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the East/West hemisphere character. Press ▼ & ▲arrow keys to set this character to the desired hemisphere (E/W).
3. Press the **NEXT** key to move the cursor to the number digit to the right. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 3 digits have been set to the Longitude (0-180) position of this satellite selection. Press the **SAVE** key to save the LON parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

2.3.5.4. RHCP (MHz) freq

Enter or edit the **Right Hand Circular *Frequency*** (in MHz) for the receiver to use for tracking this satellite. Range of acceptable frequency input is 950-2150 MHz

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 4 digits have been set to the desired tracking Frequency for this satellite selection. Press the **SAVE** key to save the FREQ parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

2.3.5.5. BAUD

Enter or edit the best ***Baud rate*** for the receiver to use for this satellite. Range of acceptable input is 5000-30000 symbols per second.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 5 digits have been set to the desired Baud rate for this satellite selection. Press the **SAVE** key to save the BAUD parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

2.3.5.6. FEC

Enter or edit the best ***Forward Error Correction rate*** for the receiver to use for this satellite.

This choice presets all of the other sub-menu parameters to factory defaults for the satellite you choose to set this SAT to.

1. Press the **NEXT** key to select this parameter for adjustment.
2. Once selected, press ▼ & ▲ arrow keys to scroll through a list of choices which this SAT can be preset to. This list may change in future software revisions. The current choices are:

AUTO	Automatically scans through all the standard DVB & DSS FEC rates.
1/2	
2/3	
3/4	
5/6	
6/7	
7/8	
SCPC	
AUTO*	Automatically scans through all the available forced ***** (star'ed) FEC rates. If the satellite does not generate an NID but does have a unique combination of FREQ, BAUD and FEC lock, select the appropriate *FEC** choice from this list. The system will then generate its own unique forced NID to represent the desired satellite. You will need to enter this pseudo NID in the *NID* setting below.
1/2*	
2/3*	
3/4*	
5/6*	
6/7*	
7/8*	
NBIF	

3. When the desired choice is displayed, press the **SAVE** key to save the parameters for this SAT. This saves the FEC rate to use for this SAT.
4. If you want to edit any of the ***default*** values that are loaded with preset, press the ▼arrow key to go to the next sub-menu parameter.
5. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

2.3.5.7. NID

Enter or edit the best ***Network ID*** 4 digit HEX value for the receiver used to which is used to identify & track this satellite.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit (only valid HEX values 0-F will be displayed).
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 4 digits have been set to the desired NID for this satellite selection. Press the **SAVE** key to save the NID parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼arrow key to go to the next sub-menu parameter.

6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

2.3.6. SAT2 - Second Satellite Parameters

Access all of the SAT2 individual parameters via a sub menu. If a second SAVED satellite is not needed, preset SAT2 to empty/blank so **NEXT** will skip over this selection when you are switching satellites.

All of the SAT2 parameters are set exactly the same way that the SAT1 parameters were set, but would be set to different choices. Refer to the parameter setting information in the SAT1 – First Satellite Parameters paragraphs to set PRESET, NAME, LON, RHCP freq, BAUD, FEC, and NID for a second satellite that you wish to use periodically.

2.3.7. SAT3 - Third Satellite Parameters

Access all of the SAT3 individual parameters via a sub menu. If a third SAVED satellite is not needed, preset SAT3 to empty/blank so **NEXT** will skip over this selection when you are switching satellites.

All of the SAT3 parameters are set exactly the same way that the SAT1 parameters were set, but would be set to different choices. Refer to the parameter setting information in the SAT1 – First Satellite Parameters paragraphs to set PRESET, NAME, LON, RHCP freq, BAUD, FEC, and NID for a third satellite that you wish to use periodically.

2.3.8. SAT4 - Fourth Satellite Parameters

Access all of the SAT4 individual parameters via a sub menu. If a forth SAVED satellite is not needed, preset SAT4 to empty/blank so **NEXT** will skip over this selection when you are switching satellites.

All of the SAT4 parameters are set exactly the same way that the SAT1 parameters were set, but would be set to different choices. Refer to the parameter setting information in the SAT1 – First Satellite Parameters paragraphs to set PRESET, NAME, LON, RHCP freq, BAUD, FEC, and NID for a forth satellite that you wish to use periodically.

2.3.9. SAT5 - Fifth Satellite Parameters

Access all of the SAT5 individual parameters via a sub menu. If a fifth SAVED satellite is not needed, preset SAT5 to empty/blank so **NEXT** will skip over this selection when you are switching satellites.

All of the SAT5 parameters are set exactly the same way that the SAT1 parameters were set, but would be set to different choices. Refer to the parameter setting information in the SAT1 – First Satellite Parameters paragraphs to set PRESET, NAME, LON, RHCP freq, BAUD, FEC, and NID for a fifth satellite that you wish to use periodically.

2.3.10. SAT6 - Sixth Satellite Parameters

Access all of the SAT6 individual parameters via a sub menu. If a sixth SAVED satellite is not needed, preset SAT6 to empty/blank so **NEXT** will skip over this selection when you are switching satellites.

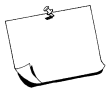
All of the SAT6 parameters are set exactly the same way that the SAT1 parameters were set, but would be set to different choices. Refer to the parameter setting information in the SAT1 – First Satellite Parameters paragraphs to set PRESET, NAME, LON, RHCP freq, BAUD, FEC, and NID for a sixth satellite that you wish to use periodically.

2.3.11. FACTORY SETTINGS

Accessing the Factory Settings parameters should ***ONLY*** be done by a qualified technician from an authorized Sea Tel dealer. The Antenna Model and Serial Number information is located on a sticker which can be found on top of the electronics enclosure. The parameters are:

2.3.11.1. Serial Number

This parameter sets Serial Number of the Antenna Pedestal into the PCU memory. The serial number starts with 98 followed by 6 digits that are editable. This parameter allows the serial number of the antenna to be displayed on the display of the Antenna Control Panel during the initialization process.



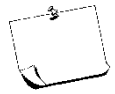
NOTE: The Serial Number parameter setting is saved in the PCU, therefore, MUST be set whenever the PCU is changed.

After this parameter has been set correctly, it must be SAVED in the PCU.

1. Press the **NEXT** key to SELECT this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 6 digits have been set to the correct Serial Number of the antenna pedestal that this PCU is mounted on. Press the **SAVE** key to save the Serial Number parameter.
5. Press **SAVE** again to exit the sub-menu and return to the FACTORY SETTINGS main menu display. From there you can press the ▲ arrow key to go UP through the SAT numeric menu choices.

2.3.11.2. MODEL CONFIGURATION

This parameter sets all of the internal drive, scale factor and limits for the motors, gear ratios and sensors FOR THIS MODEL ANTENNA.



NOTE: The MODEL parameter setting is saved in the PCU, therefore, MUST be set whenever the PCU is changed.

WARNING: ***Improper setting of this parameter WILL cause the antenna to malfunction.***

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. Once selected, press ▼ arrow to select the base model of either C14 or ST14
3. Then Press the ▲arrow keys to scroll through a list of model configuration choices. The current choices are blank, M, or D.
   - **ST14/C14** : Single Receiver Configuration
   - **ST14M/C14M**: Multiple receiver Configuration
   - **ST14D/C14D**: DiSEqC compatible Configuration (Dish Network, Bell TV)

When the correct base model and model configuration value(s) are displayed, press the **SAVE** key to save to memory. As mentioned earlier this saves the drive, scale factors and limits for this antenna. *If this parameter is **NOT set correctly**, the **antenna WILL malfunction**.*

2.3.11.3. LAT (Ships Latitude)

This parameter is automatically set by the GPS antenna mounted on the pedestal inside the radome. The GPS input enables the antenna to quickly & accurately target satellites (SAT1 – SAT6).

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the left. Press▼ & ▲arrow keys to increment/decrement this digit.
4. Press the **NEXT** key to move the cursor to the next character to the left. Press ▼ & ▲ arrow keys to toggle this character between N (North) and S (South).

   Press the **SAVE** key to save the current ships latitude in the LAT parameter.

2.3.11.4. LON (Ships Longitude)

This parameter is automatically set by the GPS antenna mounted on the Coastal pedestal inside the radome. The GPS input enables the antenna to quickly & accurately target satellites (SAT1 – SAT6).

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
5. Press the **NEXT** key to move the cursor to the next character to the right. Press ▼ & ▲ arrow keys to toggle this character between E (East) and W (West).

   Press the **SAVE** key to save the current ships longitude in the LON parameter.

2.3.11.5. Latitude Ranges:

The three latitude ranges in the "LAT-THRESH OFFSET TABLE" are defined by setting ***2*** system parameters, "Low Lat Lim" and "High Lat Lim".

2.3.11.5.1. Lower Latitude Range

The LOW LAT LIM parameter defines the "Lower" Latitude Limitation Range and is entered using any whole degree from 0-90. The LOW LAT LIM parameter sets the highest latitude position of the lower latitude range. Therefore the lower latitude range will be any latitude range from 0˚ to LOW LAT LIM parameter. While in this range, the system will use the parameter entered for LOW LAT OFFSET for calculating the tracking threshold

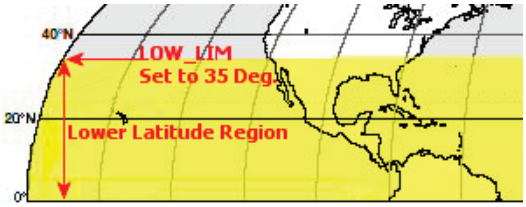


Figure 2-1 Lower Latitude Range

Example: To define a Lower Latitude Range of 0˚ to 35˚, enter a LOW LAT LIM parameter value of 35.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
5. Press the **SAVE** key to save the desired parameter

2.3.11.5.2. Middle Latitude Range

The "Middle" Latitude Limitation Range is defined by the values set for the LOW LAT LIM *and* HIGH LAT LIM parameters. The HIGH LAT LIM parameter sets the highest latitude position of the Middle latitude range while the LOW LAT LIM parameter entered sets the lowest latitude position of the Middle latitude range. Therefore the Middle latitude range will be any latitude position from the LOW LAT LIM parameter to the HIGH LAT LIM parameter. Example: To define a Middle Latitude range of 35˚ to 45˚, enter a HIGH LAT LIM of 45 *and* enter a LOW LAT LIM of 35˚ While in this range the

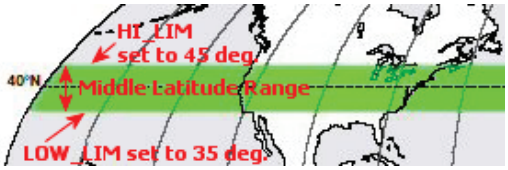


Figure 2-2 Middle Latitude Range

system will use the parameter entered for MID LAT OFFSET for calculating the tracking threshold.

2.3.11.5.3. Upper Latitude Range

The HIGH LAT LIM parameter defines the "Upper" Latitude Limitation Range and is any whole degree from1-90. The HIGH LAT LIM parameter sets the lowest latitude position of the Upper latitude range. Therefore the upper latitude range will be any latitude range from HIGH LAT LIM to 90˚. Example: To define an upper Latitude Range of 45˚ to 90˚, enter a HIGH LAT LIM of 45. While in this range the system will use the parameter entered for HIGH LAT OFFSET for calculating the tracking threshold.

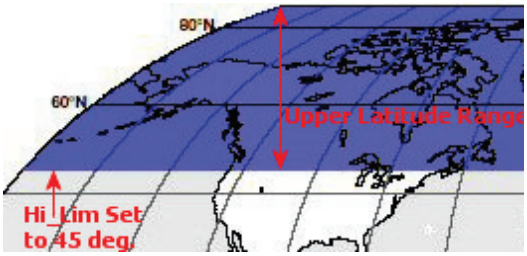


Figure 2-3 Upper Latitude Range

2.3.11.6. LOW/MID/HI LAT OFFSET (Threshold Offset)

The threshold-offset parameters are an AGC value from 0-255 that is summed to the average noise floor, to properly calculate the systems tracking signal threshold every time the system is commanded to Target or Search for a desired satellite.

Example: If the Averaged noise floor is 1100 AGC counts and the Threshold Offset value is 40, the resultant AGC threshold would be set to 1140 counts, thereby triggering the Tracking status for any AGC value1141 or higher.

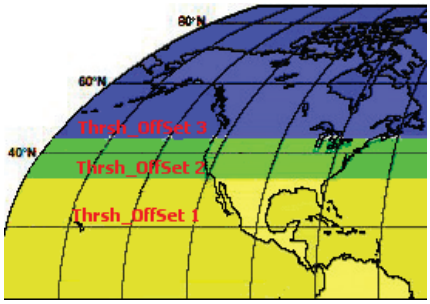


Figure 2-4 Threshold Offset Regions

2.3.11.6.1. LOW LAT OFFSET

The LOW LAT OFFS parameter defines what threshold offset value parameter is used when the vessel is located within the Lower Latitude Range.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
5. Press the **SAVE** key to save this parameter to memory.

2.3.11.6.2. MID LAT OFFSET

The MID LAT OFFS parameter defines what threshold offset value parameter is used when the vessel is located within the Middle Latitude Range.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.

4. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
5. Press the **SAVE** key to save this parameter to memory.

2.3.11.6.3. HIGH LAT OFFSET

The HIGH LAT OFFS parameter defines what threshold offset value parameter is used when the vessel is located within the Upper Latitude Range.

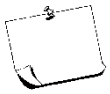
1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
5. Press the **SAVE** key to save this parameter to memory

To operate the system in the mode previously known as Auto Threshold set all three threshold offset parameters to the same value, thereby using the same Thresh Offset parameter value regardless of the vessels Geo Location.

2.4. Saving the SETUP Parameters

When you have completed setting the desired parameters above, Press and Hold **SAVE** for 6 seconds to save the changes you have made to the settings and exit SETUP Mode. "Settings Saved" will be displayed.

If you do NOT want to save the changes to NVRAM, Press **SAVE** +▲ to exit SETUP Mode without permanently saving any parameter changes.



NOTE: *You will save individual set-up parameter settings as you modify them in the procedure below (quick presses of the **SAVE** key). These will only save the settings until POWER is cycled to the antenna.*

When you are finished making all of your desired changes, you ***MUST press and hold the SAVE key for three seconds*** to write the changes you have made to memory ("Settings Saved" will be displayed) in the PCU, so they will be available after POWER has been cycled to the antenna.

THIS PAGE INTENTIONALLY LEFT BLANK

3. Setup for Model ST14M

3.1. System Checkout

1. Press the **POWER** key on the antenna control panel. The display should report model and software versions, verifying the DC power connection between the antenna control panel and the antenna pedestal assembly.
2. Turn power ON to the satellite receiver and the TV monitor. The television may now be displaying "searching for satellite signal" verifying proper video connections between the receiver and the monitor.

3.2. Initial Factory Setup

Your system comes from the factory preprogrammed for the following satellites:

SAT1	DTV 101 W	DirecTV 101 W
SAT2	DTV 110 W	DirecTV 110 W
SAT3	DTV 119 W	DirecTV 119 W
SAT4	Dsh 110 W	Dish Network 110 W
SAT5	Dsh 119 W	Dish Network 119 W
SAT6	EMPTY	No Selected Service

If you want to change this programming refer to the paragraphs below.

3.3. Changing the Initial Factory Setup

If you want to change the order of the initial setup of satellites, remove unused satellites or add/replace with new satellites then refer to the paragraphs below.

Press and hold **SAVE** + ▼ for 6 seconds to access SETUP Mode. "Setup Mode" will be displayed on the first line of the display while the panel is in SETUP Mode.

Use the ▼ & ▲ arrow keys to scroll down & up through the Setup parameters listed below.

NOTE: *You will save individual set-up parameter settings as you modify them in the procedure below (quick presses of the SAVE key). These will only save the settings until POWER is cycled to the antenna.*

When you are finished making all of your desired changes, you ***MUST press and hold the SAVE key for six seconds, "Settings Saved" will be displayed.*** Saving writes all of the parameters, including the ones you have changed, to memory in the PCU so they will be available after POWER has been cycled to the antenna

3.3.1. Adjusting Panel Brightness

1. Press the **NEXT** key to select this parameter for adjustment.
2. Once selected, press ▲& ▼ arrow keys to adjust the backlighting illumination of the display to desired level. Each key press steps the value 8 counts.
3. Then press the SAVE key to save the adjusted setting.
4. Press the ▼ arrow key to go to the next parameter.

3.3.2. Threshold Offset

This displays the current Threshold Offset value. This parameter is automatically set based on the vessel's GEO location. See "Latitude Ranges" later in this chapter for configuration and setup information.

3.3.3. Targeting Mode Parameter Selection

1. Press the **NEXT** key to select this parameter for adjustment.
2. Once selected, press ▼ & ▲ arrow keys to scroll through a list of choices until MANUAL Targeting is displayed. Then press the **SAVE** key to submit.

- **MANUAL TARGET**:

  Intended Use:

  Single or multi-satellite tracking requirement.

  Description:

  By selecting this mode of manual operation the antenna will not automatically target any satellite preset regardless of any received commands that may be sent by the satellite receiver to do so. In this mode the user is required to manually target the desired satellite by pressing the **NEXT** key to select the appropriate Preset (i.e. SAT 2) and allowing the satellite receiver to select receive polarity based on the current channel selection.

The following table serves as a guide to help properly setup your ST-14. Contact your (prospective) Service Provider to define which satellite(s) are required which is normally based on your service subscription.

Service Provider	Satellites Required	Target Mode Parameter	SAT 1 Preset	SAT 2 Preset	SAT 3 Preset	SAT 4 Preset	SAT 5 Preset	SAT 6 Preset
Generic	1-6	Manual	As required by service provider	As required by service provider or EMPTY if not required	As required by service provider or EMPTY if not required	As required by service provider or EMPTY if not required	As required by service provider or EMPTY if not required	As required by service provider or EMPTY if not required
DirecTV	1-6	Manual	As required by service provider	As required by service provider or EMPTY if not required	As required by service provider or EMPTY if not required	As required by service provider or EMPTY if not required	As required by service provider or EMPTY if not required	As required by service provider or EMPTY if not required

3.3.4. Setting Threshold Offset for Proper Tracking

To allow for a variance in AGC delta as a vessel travels from north to south or vice versa, the antenna system will automatically calculate the tracking threshold based on one of three pre-determined latitude ranges, "Lower, Middle, Upper", and their programmed Threshold Offset Parameter. These three ranges are defined by two adjustable system parameters known as "LOW LAT LIM" and "HIGH LAT LIM". The Threshold-Offset Parameter values associated with these ranges are based on an internal lookup table known as the "LAT-THRESH OFFSET TABLE". Although set at the factory this table is fully adjustable, either from the ACP or through the RS-232 serial interface, based on user preference.

Range	Region Set	Limitation Parameter	Factory Default	Offset Parameter	Factory Default
Lower	0˚ to LOW LAT LIM	LOW LAT LIM	35	THRSH OFFS_1	80
Middle	LOW LAT LIM to HIGH LAT LIM	Defined by LOW LAT LIM & HIGH LAT LIM	35.1 to 44.9	THRSH OFFS_2	60
Upper	HIGH LAT LIM to 90˚	HIGH LAT LIM	45	THRSH OFFS_3	30

SAT1 - First Satellite Parameters

Access all of the SAT1 individual parameters via a sub menu. Choices are:

3.3.4.1. PRESET

This choice presets all of the other sub-menu parameters to factory defaults for the satellite you choose to set this SAT to.

1. Press the **NEXT** key to select this parameter for adjustment.
2. Once selected, press ▼ & ▲ arrow keys to scroll through a list of choices which this SAT can be preset to. This list may change in future software revisions. The current choices are:

Empty	Blanks/zeroes all parameters for this satellite, so switching satellites (NEXT) will skip over the satellites you don't want (*if you only use ONE satellite, you should preset all of the other SAT selections to be empty/blank*).
ExpV82	Bell ExpressVu @ 82W
ExpV91	Bell ExpressVu @ 91W
DTV 72	DirecTV @ 72W
DTV101	DirecTV @ 101W
DTV110	DirecTV @ 110.1W
DTV119	DirecTV @ 119W
Dish61	Dish Network @ 61W
Dish73	Dish Network @ 73W
Dish77	Dish Network @ 77W
Dsh110	Dish Network @ 110W
Dsh119	Dish Network @ 119W
Dsh129	Dish Network @ 129W
Dsh148	Dish Network @ 148W

3. When the desired choice is displayed, press the **SAVE** key to save the parameters for this SAT. This saves the ***DEFAULT*** Satellite Name, Satellite Longitude, RHCP frequency, Baud rate, FEC rate, and Network ID of this SAT.
4. If you want to edit any of the ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
5. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

3.3.4.2. NAME

Enter or edit the 6 character ***Name*** you want to use for this saved satellite.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the leftmost character. Press ▼ & ▲ arrow keys to increment/decrement this character.
3. Press the **NEXT** key to move the cursor to the next character to the right. Press ▼ & ▲ arrow keys to increment/decrement this character.
4. Continue editing characters (6 max) until all desired characters have been set to create the NAME you want to use for this satellite selection. Press the **SAVE** key to save the NAME parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

3.3.4.3. LON

Enter or edit the ***Longitude*** position of this satellite. Range of acceptable values are 0-180, East or West (E or W).

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the East/West hemisphere character. Press ▼ & ▲arrow keys to set this character to the desired hemisphere (E/W).
3. Press the **NEXT** key to move the cursor to the number digit to the right. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 3 digits have been set to the Longitude (0-180) position of this satellite selection. Press the SAVE key to save the LON parameter for this SAT.

5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

3.3.4.4. RHCP (MHz) freq

Enter or edit the **Right Hand Circular *Frequency*** (in MHz) for the receiver to use for tracking this satellite. Range of acceptable frequency input is 950-2150 MHz

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 4 digits have been set to the desired tracking Frequency for this satellite selection. Press the **SAVE** key to save the FREQ parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

3.3.4.5. BAUD

Enter or edit the best ***Baud rate*** for the receiver to use for this satellite. Range of acceptable input is 5000-30000 symbols per second.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 5 digits have been set to the desired Baud rate for this satellite selection. Press the **SAVE** key to save the BAUD parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

3.3.4.6. FEC

Enter or edit the best ***Forward Error Correction rate*** for the receiver to use for this satellite.

This choice presets all of the other sub-menu parameters to factory defaults for the satellite you choose to set this SAT to.

1. Press the **NEXT** key to select this parameter for adjustment.
2. Once selected, press ▼ & ▲ arrow keys to scroll through a list of choices which this SAT can be preset to. This list may change in future software revisions. The current choices are:

AUTO	Automatically scans through all the standard DVB & DSS FEC rates.
1/2	
2/3	
3/4	
5/6	
6/7	

7/8	
SCPC	
AUTO*	Automatically scans through all the available forced ***** (star'ed) FEC rates. If the satellite does not generate an NID but does have a unique combination of FREQ, BAUD and FEC lock, select the appropriate *FEC** choice from this list. The system will then generate its own unique forced NID to represent the desired satellite. You will need to enter this pseudo NID in the *NID* setting below.
1/2*	
2/3*	
3/4*	
5/6*	
6/7*	
7/8*	
NBIF	

3. When the desired choice is displayed, press the **SAVE** key to save the parameters for this SAT. This saves the FEC rate to use for this SAT.
4. If you want to edit any of the ***default*** values that are loaded with preset, press the ▼arrow key to go to the next sub-menu parameter.
5. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

3.3.4.7. NID

Enter or edit the best ***Network ID*** 4 digit HEX value for the receiver used to which is used to identify & track this satellite.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit (only valid HEX values 0-F will be displayed).
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 4 digits have been set to the desired NID for this satellite selection. Press the **SAVE** key to save the NID parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

3.3.5. SAT2 - Second Satellite Parameters

Access all of the SAT2 individual parameters via a sub menu. If a second SAVED satellite is not needed, preset SAT2 to empty/blank so **NEXT** will skip over this selection when you are switching satellites.

All of the SAT2 parameters are set exactly the same way that the SAT1 parameters were set, but would be set to different choices. Refer to the parameter setting information in the SAT1 – First Satellite Parameters paragraphs to set PRESET, NAME, LON, RHCP freq, BAUD, FEC, and NID for a second satellite that you wish to use periodically.

3.3.6. SAT3 - Third Satellite Parameters

Access all of the SAT3 individual parameters via a sub menu. If a third SAVED satellite is not needed, preset SAT3 to empty/blank so **NEXT** will skip over this selection when you are switching satellites.

All of the SAT3 parameters are set exactly the same way that the SAT1 parameters were set, but would be set to different choices. Refer to the parameter setting information in the SAT1 – First Satellite Parameters

paragraphs to set PRESET, NAME, LON, RHCP freq, BAUD, FEC, and NID for a third satellite that you wish to use periodically.

3.3.7. SAT4 - Fourth Satellite Parameters

Access all of the SAT4 individual parameters via a sub menu. If a forth SAVED satellite is not needed, preset SAT4 to empty/blank so **NEXT** will skip over this selection when you are switching satellites.

All of the SAT4 parameters are set exactly the same way that the SAT1 parameters were set, but would be set to different choices. Refer to the parameter setting information in the SAT1 – First Satellite Parameters paragraphs to set PRESET, NAME, LON, RHCP freq, BAUD, FEC, and NID for a forth satellite that you wish to use periodically.

3.3.8. SAT5 - Fifth Satellite Parameters

Access all of the SAT5 individual parameters via a sub menu. If a fifth SAVED satellite is not needed, preset SAT5 to empty/blank so **NEXT** will skip over this selection when you are switching satellites.

All of the SAT5 parameters are set exactly the same way that the SAT1 parameters were set, but would be set to different choices. Refer to the parameter setting information in the SAT1 – First Satellite Parameters paragraphs to set PRESET, NAME, LON, RHCP freq, BAUD, FEC, and NID for a fifth satellite that you wish to use periodically.

3.3.9. SAT6 - Sixth Satellite Parameters

Access all of the SAT6 individual parameters via a sub menu. If a sixth SAVED satellite is not needed, preset SAT6 to empty/blank so **NEXT** will skip over this selection when you are switching satellites.

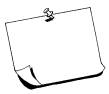
All of the SAT6 parameters are set exactly the same way that the SAT1 parameters were set, but would be set to different choices. Refer to the parameter setting information in the SAT1 – First Satellite Parameters paragraphs to set PRESET, NAME, LON, RHCP freq, BAUD, FEC, and NID for a sixth satellite that you wish to use periodically.

3.3.10. FACTORY SETTINGS

Accessing the Factory Settings parameters should ***ONLY*** be done by a qualified technician from an authorized Sea Tel dealer. The Antenna Model and Serial Number information is located on a sticker which can be found on top of the electronics enclosure. The parameters are:

3.3.10.1. Serial Number

This parameter sets Serial Number of the Antenna Pedestal into the PCU memory. The serial number starts with 98 followed by 6 digits that are editable. This parameter allows the serial number of the antenna to be displayed on the display of the Antenna Control Panel during the initialization process.



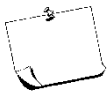
NOTE: The Serial Number parameter setting is saved in the PCU, therefore, MUST be set whenever the PCU is changed.

After this parameter has been set correctly, it must be SAVED in the PCU.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 6 digits have been set to the correct Serial Number of the antenna pedestal that this PCU is mounted on. Press the **SAVE** key to save the Serial Number parameter.
5. Press **SAVE** again to exit the sub-menu and return to the FACTORY SETTINGS main menu display. From there you can press the ▲ arrow key to go UP through the SAT numeric menu choices.

3.3.10.2. MODEL CONFIGURATION

This parameter sets all of the internal drive, scale factor and limits for the motors, gear ratios and sensors FOR THIS MODEL ANTENNA.

	**NOTE: The MODEL parameter setting is saved in the PCU, therefore, MUST be set whenever the PCU is changed.**
	WARNING: ***Improper setting of this parameter WILL cause the antenna to malfunction.***

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. Once selected, press ▼ arrow to select the base model of either C14 or ST14
3. Then Press the ▲arrow keys to scroll through a list of model configuration choices. The current choices are blank, M, or D.
   - **ST14/C14** : Single Receiver Configuration
   - **ST14M/C14M**: Multiple receiver Configuration
   - **ST14D/C14D**: DiSEqC compatible Configuration (Dish Network, Bell TV)
4. When the correct base model and model configuration value(s) are displayed, press the **SAVE** key to save to memory. As mentioned earlier this saves the drive, scale factors and limits for this antenna. *If this parameter is* ***NOT set correctly****, the* ***antenna WILL malfunction****.*

3.3.10.3. LAT (Ships Latitude)

This parameter is automatically set by the GPS antenna mounted on the pedestal inside the radome. The GPS input enables the antenna to quickly & accurately target satellites (SAT1 – SAT6).

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the left. Press▼ & ▲arrow keys to increment/decrement this digit.
4. Press the **NEXT** key to move the cursor to the next character to the left. Press ▼ & ▲ arrow keys to toggle this character between N (North) and S (South).
5. Press the **SAVE** key to save the current ships latitude in the LAT parameter.

3.3.11. LON (Ships Longitude)

This parameter is automatically set by the GPS antenna mounted on the Coastal pedestal inside the radome. The GPS input enables the antenna to quickly & accurately target satellites (SAT1 – SAT6) when you press the **NEXT** key on the Antenna Control Panel.

1. Press the **NEXT** key to SELECT this sub-menu parameter for adjustment.
2. A cursor will appear under the leftmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the right. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Press the **NEXT** key to move the cursor to the next digit to the right. Press ▼ & ▲ arrow keys to increment/decrement this digit.
5. Press the **NEXT** key to move the cursor to the next character to the right. Press ▼ & ▲ arrow keys to toggle this character between E (East) and W (West).
6. Press the **SAVE** key to save the current ships longitude in the LON parameter.

3.3.11.1. Latitude Ranges:

The three latitude ranges in the "LAT-THRESH OFFSET TABLE" are defined by setting ***2*** system parameters, "Low Lat Lim" and "High Lat Lim".

3.3.11.1.1. Lower Latitude Range

The LOW LAT LIM parameter defines the "Lower" Latitude Limitation Range and is entered using any whole degree from 0-90. The LOW LAT LIM parameter sets the highest latitude position of the lower latitude range. Therefore the lower latitude range will be any latitude range from 0˚ to LOW LAT LIM parameter. While in this range, the system will use the parameter entered for LOW LAT OFFSET for calculating the tracking threshold

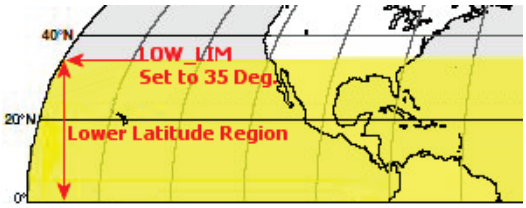


Figure 3-1 Lower Latitude Range

Example: To define a Lower Latitude Range of 0˚ to 35˚, enter a LOW LAT LIM parameter value of 35.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
5. Press the **SAVE** key to save the desired parameter

3.3.11.1.2. Middle Latitude Range

The "Middle" Latitude Limitation Range is defined by the values set for the LOW LAT LIM *and* HIGH LAT LIM parameters. The HIGH LAT LIM parameter sets the highest latitude position of the Middle latitude range while the LOW LAT LIM parameter entered sets the lowest latitude position of the Middle latitude range. Therefore the Middle latitude range will be any latitude position from the LOW LAT LIM parameter to the HIGH LAT LIM parameter. Example: To define a Middle Latitude range of 35˚ to 45˚, enter a HIGH LAT LIM of 45 *and* enter a LOW LAT LIM of 35˚ While in this range the system will use the parameter entered for MID LAT OFFSET for calculating the tracking threshold.

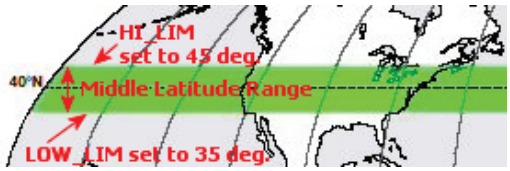


Figure 3-2 Middle Latitude Range

3.3.11.1.3. Upper Latitude Range

The HIGH LAT LIM parameter defines the "Upper" Latitude Limitation Range and is any whole degree from1-90. The HIGH LAT LIM parameter sets the lowest latitude position of the Upper latitude range. Therefore the upper latitude range will be any latitude range from HIGH LAT LIM to 90˚. Example: To define an upper Latitude Range of 45˚ to 90˚, enter a HIGH LAT LIM of 45. While in this range the system will use the parameter entered for HIGH LAT OFFSET for calculating the tracking threshold.

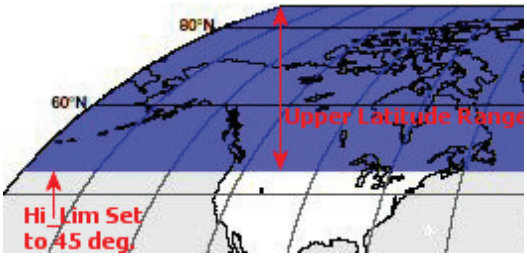


Figure 3-3 Upper Latitude Range

3.3.11.2. LOW/MID/HI LAT OFFSET (Threshold Offset)

The threshold-offset parameters are an AGC value from 0-255 that is summed to the average noise floor, to properly calculate the systems tracking signal threshold every time the system is commanded to Target or Search for a desired satellite.

Example: If the Averaged noise floor is 1100 AGC counts and the Threshold Offset value is 40, the resultant AGC threshold would be set to 1140 counts, thereby triggering the Tracking status for any AGC value1141 or higher.

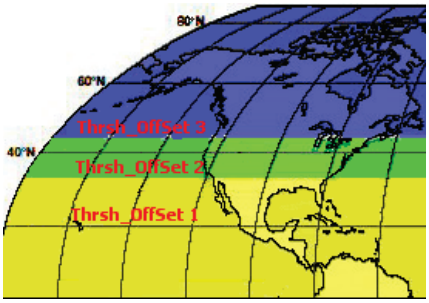


Figure 3-4 Threshold Offset Regions

3.3.11.2.1. LOW LAT OFFSET

The LOW LAT OFFS parameter defines what threshold offset value parameter is used when the vessel is located within the Lower Latitude Range.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
5. Press the **SAVE** key to save this parameter to memory.

3.3.11.2.2. MID LAT OFFSET

The MID LAT OFFS parameter defines what threshold offset value parameter is used when the vessel is located within the Middle Latitude Range.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
5. Press the **SAVE** key to save this parameter to memory.

3.3.11.2.3. HIGH LAT OFFSET

The HIGH LAT OFFS parameter defines what threshold offset value parameter is used when the vessel is located within the Upper Latitude Range.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Press the **NEXT** key to move the cursor to the next digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.

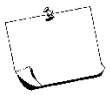
5. Press the **SAVE** key to save this parameter to memory

To operate the system in the mode previously known as Auto Threshold set all three threshold offset parameters to the same value, thereby using the same Thresh Offset parameter value regardless of the vessels Geo Location.

3.4. Saving the SETUP Parameters

When you have completed setting the desired parameters above, Press and Hold **SAVE** for 6 seconds to save the changes you have made to the settings and exit SETUP Mode. "Settings Saved" will be displayed.

If you do NOT want to save the changes to NVRAM, Press **SAVE** +▲ to exit SETUP Mode without permanently saving any parameter changes.



***NOTE**: You will save individual set-up parameter settings as you modify them in the procedure below (quick presses of the **SAVE** key). These will only save the settings until POWER is cycled to the antenna.*

When you are finished making all of your desired changes, you ***MUST press and hold the SAVE key for three seconds*** to write the changes you have made to memory ("Settings Saved" will be displayed) in the PCU, so they will be available after POWER has been cycled to the antenna.

4. Setup for Model ST14E

4.1. System Checkout

1. Press the POWER key on the antenna control panel. The display should report model and software versions, verifying the DC power connection between the antenna control panel and the antenna pedestal assembly.
2. Turn power ON to the satellite receiver and the TV monitor. The television may now be displaying "searching for satellite signal" verifying proper video connections between the receiver and the monitor.

4.2. Initial Factory Setup

Your system comes from the factory preprogrammed for the following satellites:

SATA	HtBd13	Hot Bird @ 13E
SATB	Astr19	Astra1 @ 19E
SATC	Astr28	Astra2 @ 28E

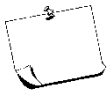
If you want to change this programming refer to the paragraphs below.

4.3. Changing the Initial Factory Setup

If you want to change the order of the initial setup of satellites, remove unused satellites or add/replace with new satellites then refer to the paragraphs below.

Press and hold **SAVE** + ▼ for 6 seconds to access SETUP Mode. "Setup Mode" will be displayed on the first line of the display while the panel is in SETUP Mode.

Use the ▼ & ▲ arrow keys to scroll down & up through the Setup parameters listed below.



NOTE: *You will save individual set-up parameter settings as you modify them in the procedure below (quick presses of the SAVE key). These will only save the settings until POWER is cycled to the antenna.*

When you are finished making all of your desired changes, you ***MUST press and hold the SAVE key for six seconds, "Settings Saved" will be displayed.*** Saving writes all of the parameters, including the ones you have changed, to memory in the PCU so they will be available after POWER has been cycled to the antenna.

4.3.1. Adjusting Panel Brightness

1. Press the **NEXT** key to select this parameter for adjustment.
2. Once selected, press ▲& ▼ arrow keys to adjust the backlighting illumination of the display to desired level. Each key press steps the value 8 counts.
3. Then press the **SAVE** key to save the adjusted setting.
4. Press the ▼ arrow key to go to the next parameter.

4.3.2. Setting Auto Threshold for Proper Tracking

Auto Threshold needs to be set to about 1/3rd of the difference in AGC between noise floor (OFF satellite) signal level and peak (ON satellite) signal level. The most common value for the Coastal 14 is 60.

1. Press the **NEXT** key to select this parameter for adjustment.
2. Once selected, press ▼ & ▲ arrow keys to increment/decrement the indicated digit to the desired value.
3. Press **NEXT** to move the adjustment cursor to the next character to be edited. Press ▼ & ▲ arrow keys to increment/decrement the indicated character to the desired value.
4. Repeat the previous step until all desired character positions have been edited.
5. Then press the **SAVE** key once to save this setting.

6. Press the ▼ arrow key to go to the next parameter.

4.3.3. SATA - First Satellite Parameters

Access all of the SATA individual parameters via a sub menu. Choices are:

4.3.3.1. PRESET

This choice presets all of the other sub-menu parameters to factory defaults for the satellite you choose to set this SAT to.

1. Press the **NEXT** key to select this parameter for adjustment.
2. Once selected, press ▼ & ▲ arrow keys to scroll through a list of choices which this SAT can be preset to. This list may change in future software revisions. The current choices are:

Empty	Blanks/zeroes all parameters for this satellite, so switching satellites (NEXT) will skip over the satellites you don't want (*if you only use ONE satellite, you should preset all of the other SAT selections to be empty/blank*).
HtBd13	Hot Bird @ 13E
Astr19	Astra1 @ 19E
Astr28	Astra2 @ 28E
TkSt42	TurkSat @ 42E

3. When the desired choice is displayed, press the **SAVE** key to save the parameters for this SAT. This saves the ***DEFAULT*** Satellite Name, Satellite Longitude, Lo Band and Hi Band Horizontal frequencies, Vertical frequencies, Baud rates, FEC rates, and Network ID's.
4. If you want to edit any of the ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
5. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

4.3.3.2. NAME

Enter or edit the 6 character ***Name*** you want to use for this saved satellite.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the leftmost character. Press ▼ & ▲ arrow keys to increment/decrement this character.
3. Press the **NEXT** key to move the cursor to the next character to the right. Press ▼ & ▲ arrow keys to increment/decrement this character.
4. Continue editing characters (6 max) until all desired characters have been set to create the NAME you want to use for this satellite selection. Press the **SAVE** key to save the NAME parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

4.3.3.3. LON

Enter or edit the ***Longitude*** position of this satellite. Range of acceptable values are 0-180, East or West (E or W).

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the East/West hemisphere character. Press ▼ & ▲arrow keys to set this character to the desired hemisphere (E/W).
3. Press the **NEXT** key to move the cursor to the number digit to the right. Press ▼ & ▲ arrow keys to increment/decrement this digit.

4. Continue editing until all 3 digits have been set to the Longitude (0-180) position of this satellite selection. Press the **SAVE** key to save the LON parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

4.3.3.4. Lo Band Vertical Frequency

Enter or edit the ***Ku Lo Band Vertical Frequency*** (in MHz) for the receiver to use to track this satellite. Range of acceptable frequency input is 950-2150 MHz.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 4 digits have been set to the desired tracking Frequency for this satellite selection. Press the **SAVE** key to save the FREQ parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

4.3.3.5. Hi Band Vertical Frequency

Enter or edit the ***Ku Hi Band Vertical Frequency*** (in MHz) for the receiver to use to track this satellite. Range of acceptable frequency input is 950-2150 MHz.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 4 digits have been set to the desired tracking Frequency for this satellite selection. Press the **SAVE** key to save the FREQ parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.

If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

4.3.3.6. Lo Band Horizontal Frequency

Enter or edit the ***Ku Lo Band Horizontal Frequency*** (in MHz) for the receiver to use to track this satellite. Range of acceptable frequency input is 950-2150 MHz.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 4 digits have been set to the desired tracking Frequency for this satellite selection. Press the **SAVE** key to save the FREQ parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.

If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

4.3.3.7. Hi Band Horizontal Frequency

Enter or edit the ***Ku Hi Band Horizontal Frequency*** (in MHz) for the receiver to use to track this satellite. Range of acceptable frequency input is 950-2150 MHz.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 4 digits have been set to the desired tracking Frequency for this satellite selection. Press the **SAVE** key to save the FREQ parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

4.3.3.8. Lo Band BAUD Rate

Enter or edit the ***Lo Band Baud rate*** for the receiver to use for this satellite. Range of acceptable input is 5000-30000 symbols per second.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 5 digits have been set to the desired Baud rate for this satellite selection. Press the **SAVE** key to save the BAUD parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

4.3.3.9. Hi Band BAUD Rate

Enter or edit the ***Hi Band Baud rate*** for the receiver to use for this satellite. Range of acceptable input is 5000-30000 symbols per second.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 5 digits have been set to the desired Baud rate for this satellite selection. Press the **SAVE** key to save the BAUD parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼ arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

4.3.3.10. Lo Band FEC Rate

Enter or edit the ***Lo Band Forward Error Correction rate*** for the receiver to use for this satellite.

This choice presets all of the other sub-menu parameters to factory defaults for the satellite you choose to set this SAT to.

1. Press the **NEXT** key to select this parameter for adjustment.
2. Once selected, press ▼ & ▲ arrow keys to scroll through a list of choices which this SAT can be preset to. This list may change in future software revisions. The current choices are:

AUTO	Automatically scans through all the standard DVB & DSS FEC rates.
1/2	
2/3	
3/4	
5/6	
6/7	
7/8	
AUTO*	Automatically scans through all the available forced ***** (star'ed) FEC rates. If the satellite does not generate an NID but does have a unique combination of FREQ, BAUD and FEC lock, select the appropriate *FEC** choice from this list. The system will then generate its own unique forced NID to represent the desired satellite. You will need to enter this pseudo NID in the *NID* setting below.
1/2*	
2/3*	
3/4*	
5/6*	
6/7*	
7/8*	

3. When the desired choice is displayed, press the **SAVE** key to save the parameters for this SAT. This saves the FEC rate to use for this SAT.
4. If you want to edit any of the ***default*** values that are loaded with preset, press the ▼arrow key to go to the next sub-menu parameter.
5. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

4.3.3.11. Hi Band FEC Rate

Enter or edit the ***Hi Band Forward Error Correction rate*** for the receiver to use for this satellite.

This choice presets all of the other sub-menu parameters to factory defaults for the satellite you choose to set this SAT to.

1. Press the **NEXT** key to select this parameter for adjustment.
2. Once selected, press ▼ & ▲ arrow keys to scroll through a list of choices which this SAT can be preset to. This list may change in future software revisions. The current choices are:

AUTO	Automatically scans through all the standard DVB & DSS FEC rates.
1/2	
2/3	
3/4	
5/6	
6/7	
7/8	

AUTO*	Automatically scans through all the available forced ***** (star'ed) FEC rates. If the satellite does not generate an NID but does have a unique combination of FREQ, BAUD and FEC lock, select the appropriate *FEC** choice from this list. The system will then generate its own unique forced NID to represent the desired satellite. You will need to enter this pseudo NID in the *NID* setting below.
1/2*	
2/3*	
3/4*	
5/6*	
6/7*	
7/8*	

3. When the desired choice is displayed, press the **SAVE** key to save the parameters for this SAT. This saves the FEC rate to use for this SAT.
4. If you want to edit any of the ***default*** values that are loaded with preset, press the ▼arrow key to go to the next sub-menu parameter.
5. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

4.3.3.12. Lo Band NID

Enter or edit the ***Lo Band Network ID*** 4 digit HEX value for the receiver used to Identify & track this satellite.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit (only valid HEX values 0-F will be displayed).
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 4 digits have been set to the desired NID for this satellite selection. Press the **SAVE** key to save the NID parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press **SAVE** again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

4.3.3.13. Hi Band NID

Enter or edit the ***Hi Band Network ID*** 4 digit HEX value for the receiver used to Identify & track this satellite.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit (only valid HEX values 0-F will be displayed).
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 4 digits have been set to the desired NID for this satellite selection. Press the **SAVE** key to save the NID parameter for this SAT.
5. If you want to edit any of the other ***default*** values that are loaded with preset, press the ▼arrow key to go to the next sub-menu parameter.
6. If you do not want to edit any other sub-menu parameters, press SAVE again to exit the sub-menu and return to the SAT main menu display. From there you can press the ▼ arrow key to go to next SAT numeric menu choice or to the Factory Settings menu choice.

4.3.4. SATB - Second Satellite Parameters

Access all of the SATB individual parameters via a sub menu. If a second SAVED satellite is not needed, preset SATB to "Empty" so when the **NEXT** key is pressed the antenna will not search for any unwanted satellite(s)

All of the SATB parameters are set exactly the same way that the SATA parameters were set, but would be set to different choices. Refer to the parameter setting information in the SATA – First Satellite Parameters paragraphs to set PRESET, NAME, LON, Lo Band and Hi Band VERT freq's, HORZ freq's, BAUD's, FEC's, and NID's for the second satellite you wish to use periodically.

4.3.5. SATC - Third Satellite Parameters

Access all of the SATC individual parameters via a sub menu. If a third SAVED satellite is not needed, preset SATC to "Empty" so when the **NEXT** key is pressed the antenna will not search for any unwanted satellite(s).

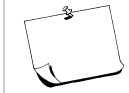
All of the SATC parameters are set exactly the same way that the SATA parameters were set, but would be set to different choices. Refer to the parameter setting information in the SATA – First Satellite Parameters paragraphs to set PRESET, NAME, LON, Lo Band and Hi Band VERT freq's, HORZ freq's, BAUD's, FEC's, and NID's for the third satellite you wish to use periodically.

4.3.6. FACTORY SETTINGS

Accessing the Factory Settings parameters should ***ONLY*** be done by a qualified technician from an authorized Sea Tel dealer. The Model Serial Number can be found on the blue and silver label below the reflector, on the blue frame of the pedestal. The parameters are:

4.3.6.1. Serial Number

This parameter sets Serial Number of the Antenna Pedestal into the PCU memory. The serial number starts with 98 followed by 6 digits that are editable. This parameter allows the serial number of the antenna to be displayed on the display of the Antenna Control Panel during the initialization process.



NOTE: The Serial Number parameter setting is saved in the PCU, therefore, MUST be set whenever the PCU is changed.

After this parameter has been set correctly, it must be SAVED in the PCU.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the rightmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the digit to the left. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Continue editing until all 6 digits have been set to the correct Serial Number of the antenna pedestal that this PCU is mounted on. Press the **SAVE** key to save the Serial Number parameter.
5. Press **SAVE** again to exit the sub-menu and return to the FACTORY SETTINGS main menu display. From there you can press the ▲ arrow key to go UP through the SAT numeric menu choices.

4.3.6.2. MODEL COASTAL ##

The Model Configuration Sub-Menu is a ***Read Only parameter in this Version of Software.***

This parameter sets all of the internal drive, scale factor and limits for the motors, gear ratios and sensors.

4.3.6.3. LAT (Ships Latitude)

This parameter is automatically set by the GPS antenna mounted on the Coastal pedestal inside the radome. The GPS input enables the antenna to quickly & accurately target satellites (SATA – SATC) when you press the NEXT key on the Antenna Control Panel.

1. Press the **NEXT** key to SELECT this sub-menu parameter for adjustment.
2. A cursor will appear under the leftmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the right. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Press the **NEXT** key to move the cursor to the next character to the right. Press ▼ & ▲ arrow keys to toggle this character between N (North) and S (South).
5. Press the **SAVE** key to save the current ships latitude in the LAT parameter.

4.3.6.4. LON (Ships Longitude)

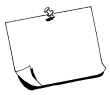
This parameter is automatically set by the GPS antenna mounted on the Coastal pedestal inside the radome. The GPS input enables the antenna to quickly & accurately target satellites (SATA – SATC) when you press the **NEXT** key on the Antenna Control Panel.

1. Press the **NEXT** key to select this sub-menu parameter for adjustment.
2. A cursor will appear under the leftmost digit. Press ▼ & ▲ arrow keys to increment/decrement this digit.
3. Press the **NEXT** key to move the cursor to the next digit to the right. Press ▼ & ▲ arrow keys to increment/decrement this digit.
4. Press the **NEXT** key to move the cursor to the next digit to the right. Press ▼ & ▲ arrow keys to increment/decrement this digit.
5. Press the **NEXT** key to move the cursor to the next character to the right. Press ▼ & ▲ arrow keys to toggle this character between E (East) and W (West).
6. Press the **SAVE** key to save the current ships longitude in the LON parameter.

4.4. Saving the SETUP Parameters

When you have completed setting the desired parameters above, Press and Hold **SAVE** for 6 seconds to save the changes you have made to the settings and exit SETUP Mode. "Settings Saved" will be displayed.

If you do NOT want to save the changes to NVRAM, Press **SAVE** +▲ to exit SETUP Mode without permanently saving any parameter changes.



***NOTE**: You will save individual set-up parameter settings as you modify them in the procedure below (quick presses of the **SAVE** key). These will only save the settings until POWER is cycled to the antenna.*

When you are finished making all of your desired changes, you ***MUST press and hold the SAVE key for six seconds*** to write the changes you have made to memory ("Settings Saved" will be displayed) in the PCU, so they will be available after POWER has been cycled to the antenna.

5. Maintenance

5.1. Warranty Information

Sea Tel Inc. supports its Coastal Series systems with a warranty program unsurpassed in the industry. These systems are backed by a TWO YEAR full warranty on parts and a ONE YEAR warranty on labor.

What's Covered by the Limited Warranty?

The Sea Tel Coastal Series Limited Warranty is applicable for parts and labor coverage to the complete antenna system, including all above-decks equipment (radome, pedestal, antenna, motors, electronics, wiring, etc.) and the antenna control panel. It does not include television sets, DBS/DTH receivers, multi-switches or other distribution equipment, whether or not supplied by Sea Tel. Televisions, DBS/DTH receivers and accessories are covered by the applicable warranties of the respective manufacturers.

Factory refurbished components used to replace systems parts under this warranty are covered by this same warranty as the original equipment for the balance of the original warranty term, or ninety (90) days from the date of replacement, whichever occurs last. Original Installation of the Coastal Series system must be accomplished by or under the supervision of an authorized Sea Tel dealer for the Sea Tel Limited Warranty to be valid and in force.

Please refer to the complete warranty information included with your system.

5.2. Who to contact for repairs

Should technical assistance be required to repair your system, the first contact should be to the agent/dealer you purchased the equipment from. Please record their contact information below for future reference. Repairs to your Coastal Series system must be accomplished by or under the supervision of an authorized Sea Tel dealer for the Sea Tel Limited Warranty to be valid and in force.

Agent/Dealer: _____

Address: _____

_____

Phone: _____ Fax: _____

Sea Tel can recommend local dealers that can provide service in your local area that can be contacted for assistance. You can contact us directly at either of the locations below;

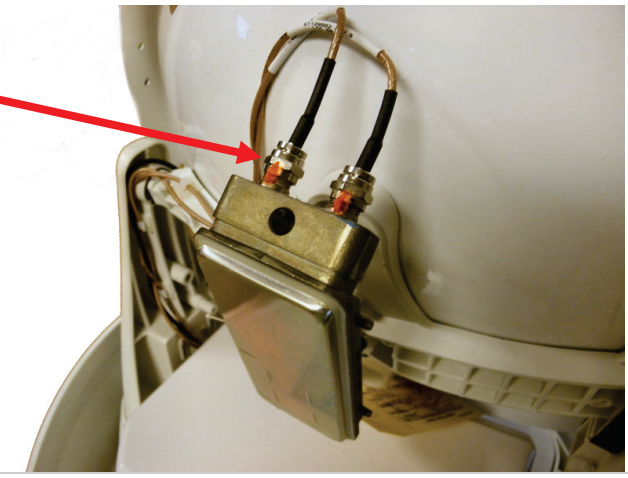
Sea Tel, Inc.
4030 Nelson Avenue
Concord, CA 94520 USA
Tel: 925-798-7979
Fax: 925-798-7986
Toll Free: 1-888-798-7979
Email: satcom.concordsupport1@cobham.com
http://www.seatel.com

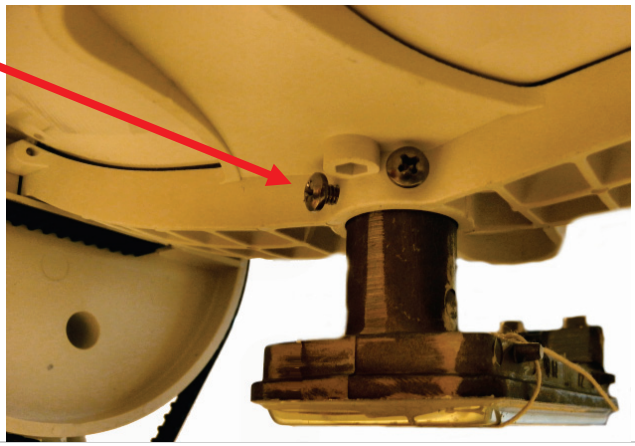
Sea Tel Europe
Unit 1 Orion Industrial Centre
Wide Lane Swaythling
Southampton, UK S018 2HJ
Tel: +44 (0)23 80 671155
Fax: +44 (0)23 80 671166
e-mail: satcom.southamptonsupport@cobham.com

5.3. Replacing an LNB

Follow the procedure below to install a Ku-Band circular receive DLA LNB Sea Tel P/N 115075-2.

Unless otherwise noted, apply adhesive to all hardware per Sea Tel Specification Document 121730

1. Turn the power Off to the Antenna 2. Remove radome top. You may need to rotate the antenna to gain access the back of the reflector.	
3. Using a 7/16” Wrench, remove the Coax(es) connected to the LNB.	

4. Using a Phillips head screw driver, remove the screws that secure the LNB to the reflector assembly. 5. Remove LNB and place aside.	
6. Install replacement LNB into mounting collar as secure using the screws that were loosened in step 4.	

7. Reconnect and secure coax(es) removed earlier.	

5.4. Preventive Maintenance

As needed - Clean the outside surface of the radome with warm soapy water to remove dust, grime and salt residue. There is no other preventive maintenance required

5.5. Fault Isolation/Trouble-shooting

The following table is provided to help isolate problems in the Coastal Series Antenna system.

Symptom	*Possible Fault*
Antenna tracking but receiver not providing desired programming	1. Incorrect satellite. Press **NEXT** to search for desired satellite 2. Receiver fault. Refer to receiver manual for operation and testing.
Antenna tracking, receiver only gets some desired channels	1. May be in weak area of footprint. 2. Receiver may not be generating correct voltage or tone output. Refer to receiver manual for operation and testing. 3. Receiver may not be passing voltage or tone output. Contact your dealer/agent. 4. LNB assembly failure. Contact your dealer/agent.
Intermittent freeze-framing of picture	1. Check for blockage 2. May be in weak area of footprint. 3. Receiver may not be generating correct voltage or tone output. Refer to receiver manual for operation and testing. 4. Check all coax cables for poor connection 5. Possible receiver failure. Contact your dealer/agent. 6. Possible antenna failure. Contact your dealer/agent.

Antenna does not come on when the ON key is pressed	1. Check +12 VDC input to antenna control panel. 2. Verify that all connections on the rear of the antenna control panel are properly seated. 3. Check the 4A fuse in the rear panel of the antenna control panel 4. Call dealer/agent for further assistance
Antenna doesn't track any satellites (constantly searching)	1. Assure that the satellite receiver is turned ON 2. Check for blockage 3. Assure correct starting elevation 4. May be out of satellite footprint 5. Check all coax cables for poor connection 6. Call dealer/agent for further assistance
Antenna in constant UNWRAP	1. Cycle antenna power OFF/ON to reinitialize the antenna. 2. Call dealer/agent for further assistance
Antenna tracks well at the pier, but loses the satellite when underway	1. Call dealer/agent for further assistance
Antenna does not stay on satellite at pier, or underway	1. Check all coax cables for poor connection 2. Call dealer/agent for further assistance

THIS PAGE INTENTIONALLY LEFT BLANK

6. ST 14 Technical Specifications

6.1. Installed Weight

Total Weight (dry):	15 lbs. (6.8 kg)

6.2. Radome

Diameter	16.5 inch (41.9cm)
Height	18 inch (45.7cm)
Mounting	Qty 4 6mm x 1.0 fasteners

6.3. Antenna C14(M/D)/ST14(M/D)

Type	Spun Aluminum reflector
Size	14.5 inch (36.8cm)
Feed	Cassegrain feed with center focus splash plate
Polarization	Circular ONLY
Min EIRP	50 dB
LNB	US Circular LNB

6.4. Antenna C14E/ST14E

Type	Spun Aluminum reflector
Size	14.5 inch (36.8cm)
Feed	Cassegrain feed with center focus splash plate
Polarization	(Manual) Linear ONLY
Min EIRP	50 dB
LNB	Universal Single Flange Linear

6.5. Stabilized Pedestal

Type	Two-axis positioning (Elevation & Azimuth)
Stabilization	3 Dimensional Velocity mode Servo
Stab Accuracy	1.5 degrees MAX, 0.7 degrees RMS in presence of specified ship motions.
Level, Train Motors	Size 23 DC Step Motors with PWM Microstep drive
Inertial Reference	3 single axis Solid State Silicon Rate Sensors
Gravity Reference	Two Axis Fluid Tilt Sensor
Azimuth Reference	Closed Loop Tracking on Satellite signal
Stabilization rates	
Roll/Pitch	> 25 degrees / second
AZ./Turn	> 15 degrees / second
Range of Motion	
Elevation	15 to 75 degrees
Azimuth	Unlimited
Maximum Ship Motion	
Roll	+/- 25 degrees
Pitch	+/- 15 degrees

Elevation Pointing

+/- 15 degrees of Roll	35 to 60 degrees
+/- 25 degrees of Roll	40 to 50 degrees

6.6. US Circular LNB

Sea Tel Part Number:	127444-1
Type:	Dual output
LNB Manufacturer:	CAL AMP, but may vary
RF Frequencies:	12.2 - 12.7 GHz
IF Frequency:	950 - 1450 MHz
LO Frequency:	11.250 GHz
Noise Figure:	1.1 dB max.
Polarization modes:	LHCP or RHCP circular
Polarization control:	18VDC (LHCP) or 13VDC (RHCP) voltage switched in pedestal

6.7. DishPro Circular LNB

Sea Tel Part Number:	130210
Type:	Single output
LNB Manufacturer:	DishPro, but may vary
RF Frequencies:	12.2 - 12.7 GHz
IF Frequency:	950 - 1450 MHz
LO Frequency:	11.250 GHz
Noise Figure:	1.1 dB max.
Polarization modes:	LHCP or RHCP circular
Polarization control:	18VDC (LHCP) or 13VDC (RHCP) voltage switched in pedestal

6.7.1. European Single Universal Linear LNB

Sea Tel Part Number:	127113-1	
Type:	Single output	
LNB Manufacturer:	Invertro, but may vary	
	Low Band	**High Band**
RF Frequencies:	10.7 - 11.7 GHz	11.7 - 12.75 GHz
IF Frequencies:	950 - 1950 MHz	1100 - 2150 MHz
LO Frequencies:	9.75 GHz	10.6 GHz
Noise Figure:	0.3 dB typical (0.7dB Max)	

6.7.2. Pedestal Control Unit

Features	Fully integrated controller, sensors, motor drivers, and RF signal Tracking Receiver.
Size	10" x 12 ½" x 2 1/2"

6.7.3. DVB Compliant Tracking Receiver

Internal Satellite Identification Receiver

Tuning range	950 to 2150 MHz in 1 MHz increments in DVB Mode.
Input RF Level	-85 to -25 dBm typical
Output RF Level	Input level +/- 1 dB typical
Sensitivity	25 mV / dB typical
Bandwidth	7.5-30 MHz in DVB Mode.
Satellite ID	Network ID for DVB signals. QPSK demodulator and FEC decoder lock for DSS, or DVB without NID (forced NID).
QPSK Demodulator	3000 to 30000 baud (ksps)
FEC Decoder	1/2, 2/3, 3/4, 5/6, 6/7, 7/8, Automatic.
Pipeline Decoder	DVB or DSS compliant.

6.8. Power Requirements

Voltage	11-16 VDC normal operating range
Current	3.0 Amps nominal @ 13.8 VDC
Transient Protection	
Load Dump	60 volts
Inductive coupling	+/- 200v @ 1 uSec
Reverse Battery	Indefinite

6.9. *Environmental*

Temperature	-20 to +55 degrees C.
Humidity	Up to l00% @ 40 degrees C.
Rain	Up to 4 inches per hour. Degraded RF performance when the radome surface is wet.
Wind	Up to 100 MPH from any direction.
Corrosion	Parts are corrosion resistant or treated to endure effects of salt air and salt spray.
Ship Motions for specified pointing accuracy	
Roll	+/-20 degrees with 8-12 sec periods
Pitch	+/-10 degrees with 6-12 sec periods
Yaw	+/-8 degrees with 15 to 20 sec periods
Turning rate	Up to 12 deg/sec.

THIS PAGE INTENTIONALLY LEFT BLANK

7. Computer Interface

A computer may be connected to the antenna control panel (via a 9 pin serial cable) to allow you to perform software updates to the system, This connection may also provide access to ALL the parameter settings and to query the Coastal Series antenna and view the responses it provides. The commands to set the parameters in the Coastal Series PCU are summarized below.

Monitor	Function	Response
@	GPS receiver position	DDmm,N,DDDmm,W,A **cr>**
@	GPS memory position (second query)	DDd,N,DDDd,W,m **cr>**
V	Software version	Coastal nn Version 2.nn **cr>**
P	Elevation, Azimuth, Polang, Relative	**E**DDDd**A**DDDd**p**nnnn**R**DDDd **cr>**
R	Signal level, Threshold, Network ID, Status	**L**nnnn**t**nnnn**N**xxxx @@@ k@@ **cr>**
S	Serial Number	**SN98**nnnnnn **cr>**
G	Roll and Pitch rate sensor position	**R**xxxx**P**xxxx **cr>**
H	Cross-level tilt, Level tilt, Auto Threshold, Pol Pot	**C**xxxx**L**xxxx**u**dddd**O**nnnn* **cr>**
q(k)	(Sat k) Name, Longitude, Pol Offset	**a**ABCDEF **g**DDDdW **o**+nn* **cr>**
r(k)	(Sat k) Tuning Freq, Alt Freq, Baud, FEC, NID	**f**nnnn**h**nnnn**b**nnnnn**v**X**n**xxxx **cr>**
c	**L**ow and **H**igh Latitude Limits	**L**00DD**H**00DD **cr>**
d	**L**ow, **M**id, & **H**igh Latitude Threshold Offsets	**L**0nnn**M**0nnn**H**0nnn **cr>**

Control	Function
^0080☐	Start bootloader.
^0085☐	Toggle AGC Test Mode.
^0086☐	Disable DACP updates and enter diagnostic test mode.
^0090☐	Reboot PCU.
eDDd☐	Set elevation target to DD.d degrees.
jDDDd☐	Set pseudo azimuth target to DDD.d degrees.
lDDd**N**DDDd**E**	Set Location to DD.d N/S, DDD.d E/W.
mnn☐	Set Model type to nn (range is 18, 24, 30, 20 or 14).
pnnn☐	Set POLANG target to nnn degrees (0-359, nominal: 90, range: nom.+/- 120).
s98nnnnnn☐	Set Serial Number.
tnnnn☐	Set THRESHOLD to nnnn counts (0-4095).
unnn☐	Set Auto Threshold to nnn counts (range: 000 to 255, nominal: 100).
a(k)aaaaaa☐	Set Satellite (k) Name to aaaaaa.
b(k)nnnnn☐	Set Satellite (k) Baud (symbol) rate to nnnnn.
f(k)nnnn☐	Set Satellite (k) primary tuning frequency (950-2047)-(LHCP / Vertical).
g(k)DDDd**E**☐	Set Satellite (k) longitude to DDD.d E/W degrees.
h(k)nnnn☐	Set Satellite (k) alternate tuning frequency (950-2047)-(RHCP / Horizontal).
n(k)xxxx☐	Set Satellite (k) Network ID (NID) to xxxx (0000-FFFF).
o(k)[-]nn☐	Set Satellite (k) Polang Offset +/- nn degrees.
v(k)n☐	Set Satellite (k) FEC to n.
x1DD☐	Set LOW LAT LIMIT in degrees (0-90)
x2DD☐	Set HIGH LAT LIMIT in degrees (0-90)
y1nnn	Set Low Lat. THRESHOLD OFFSET in AGC counts (0-255)

y2nnn☐	Set Mid Lat. THRESHOLD OFFSET in AGC counts (0-255)
y3nnn☐	Set High Lat. THRESHOLD OFFSET in AGC counts (0-255)
+/-	inc / dec pol trim.
C	**Tracking / DishScan ON.**
D	**Tracking / DishScan OFF, Search OFF.**
F	**Update current sat as last viewed in flash.**
N	**Select next visible satellite.**
W	**Write parameters to NVRAM.**
U	**Force Unwrap.**
Y	**Restore DACP operation.**
Z	**Send selected satellite tuning parameters to DVB receiver**
8 / 2	**Elevation UP / Down approx. 1 degree**
6 / 4	**Azimuth CCW / CW approx. 1 degree**
3 / 1	**AZ Rate Bias Up/ Down (Factory Diagnostics Only)**
7	**Toggle Search ON/OFF (Factory Diagnostics Only)**
9	**Reverse Search Azimuth Direction**
^0005☐	**Tilt Bias reset.**
^0009☐	**Set tilt Bias to current tilt readings (normalize tilt display).**
^000[4/6]☐	**Adjust Tilt Bias 1 degree Left / Right from current value.**
^000[8/2]☐	**Adjust Tilt Bias 1 degree Up / Down from current value.**
[Pt ☐	**DiSEqC target Sat command (EchoStar Auto mode), t = (Sat# - 1) x 2**

Abbreviations and range of values (unless otherwise specified).

aaaa or aaaaa	**Alpha-Numeric characters (1-9, A-Z, a-z).**
DDd or DDDd	**Decimal degrees and tenths of degrees. Equal to DDD.d degrees.**
DDmm or DDDmm	**Degrees (DDD) and minutes (mm).**
nnnn or nnnnn	**Decimal digits in counts. Range is 0-99, 0-255, 0-4095 or 0–32767.**
xxxx	**Hexadecimal digits. Range is 0000-FFFF.**
k	**Satellite index (1-6) or (a-c) Low band and (A-C) High Band.**
or cr	**Enter or Carriage Return.**

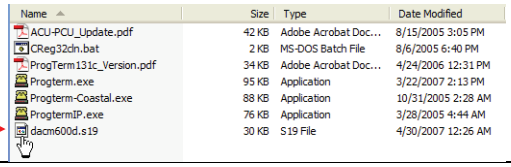
7.1.1. Programming Instructions Coastal Series Pedestal Control Unit

These instructions apply to the Coastal Series antennas.

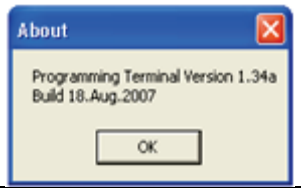
Electrical Hookup – Coastal ACP

1. Use a standard straight 9-pin serial cable (P/N 120643 or equiv.) connected between the ACP (M&C Port) and a PC with an available com port.
2.

3. Obtain a Copy of the PCU .s19 file and save in a convenient area such as the desktop or in the same directory as the ProgTerm files.

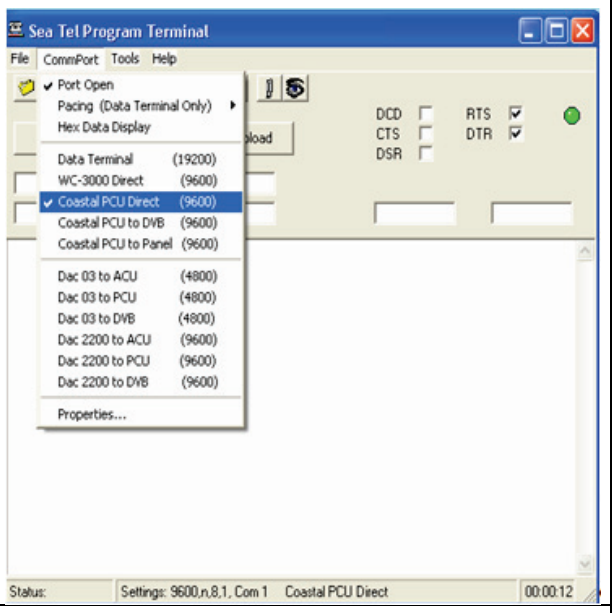

Name
Size
Type
Date Modified
ACU-PCU_Update.pdf 42 KB Adobe Acrobat Doc... 8/15/2005 3:05 PM
CReg32cln.bat 2 KB MS-DOS Batch File 8/6/2005 6:40 PM
ProgTerm131c_Version.pdf 34 KB Adobe Acrobat Doc... 4/24/2006 12:31 PM
Progterm.exe 95 KB Application 3/22/2007 2:13 PM
Progterm-Coastal.exe 88 KB Application 10/31/2005 2:28 AM
ProgtermIP.exe 76 KB Application 3/28/2005 4:44 AM
dacm600d.s19 30 KB S19 File 4/30/2007 12:26 AM

4. Click on the ProgTerm "ProgTerm" icon to open the ProgTerm program and verify the build date is Mar 2007 or later

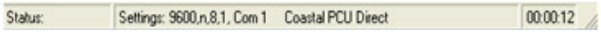


Programming Operation: PCU Software

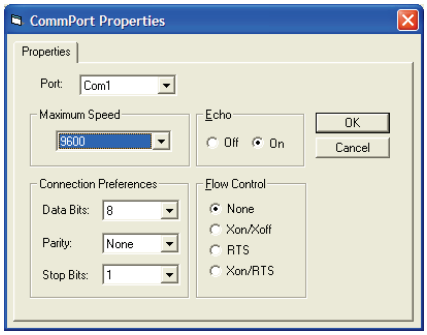
5. From the CommPort menu, select the correct ProgTerm programming mode and destination. I.E. for a Coastal PCU click the 'Coastal PCU Direct' menu item. It is very important to be sure that you have selected the correct programming mode If you select the incorrect destination and actively override the self-check warnings, you will most certainly render your system inoperable



Check the status bar at the bottom edge of the ProgTerm window. It displays the selected serial interface (baud rate and port), the operating mode (DAC Style), and program destination (ACU, PCU, or DVB).

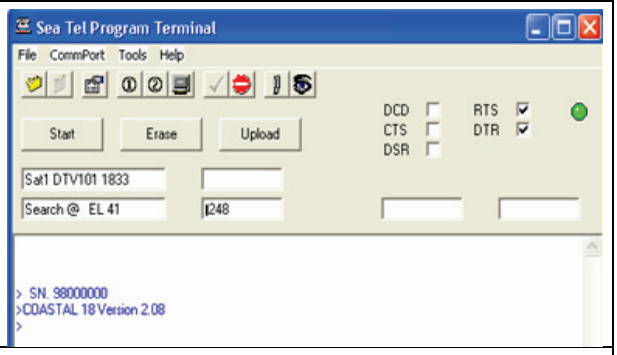


6. From the "**CommPort**" menu, select "**Properties**".
7. Verify the correct COM port is selected. Select correct Maximum Speed (9600 for Coastal Series).
8. Press "**OK**" to confirm any changes.



9. Power on ACP

10. Click on the Paper Clip button and then click on the EyeBall button in the tool bar. This queries the Module Status and Module Version. The responses will be the Antenna Serial Number and Software Version in the PCU (such as "Coastal Ver. 208"). Both of these requests must function properly before you can continue.

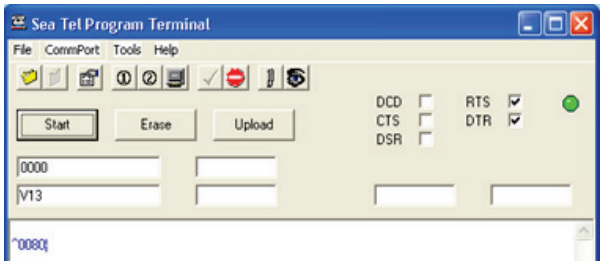


If the PCU does not respond to a status request (Paper Clip Button) the module may have been erased by a previous action. It can still be programmed but you need to contact the Service department for further instructions.

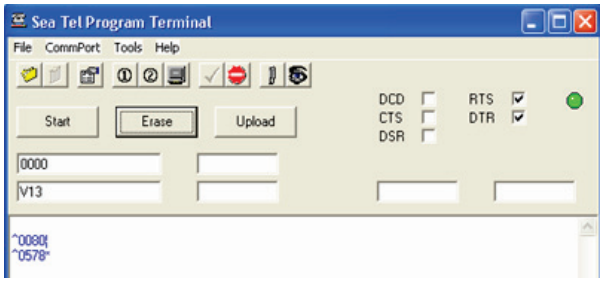
11. Press '**START**' to put the selected module into programming mode. After 2 to 3 seconds, you should see an echo of similar to the graphic on the right

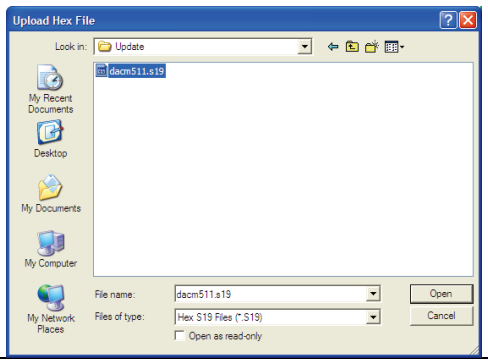
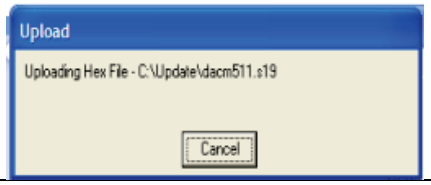
0000 (Checksum of memory)

V13 (Bootloader version #)



12. Press '**ERASE**' to clear the current Flash program memory. The screen should now respond '^**0578***' for PCU programming. If it responds with some other characters or the '*****' is not present, Press '**ERASE**' again. Do Not continue until a proper response is achieved.



13. Press '**UPLOAD**' to begin sending the new hex file program update to the ACU module. A dialog box will appear to allow you to select the file to be programmed.	
14. Program Terminal will send the new file to the desired module and you will see an Upload dialog box with a "**Cancel**" button.	
After the programming is complete, the pedestal will reinitialize. Click the Paper Clip and then the Eye Ball Buttons and both should respond with the Antenna serial number and the software version that has been installed.	

THIS PAGE INTENTIONALLY LEFT BLANK

8. Drawings

The following drawings are included with this manual for installation and maintenance reference.

8.1. ST 14 Drawings

Drawing	Title	
129000	**ST14 Electronics Assembly**	**8-3**
129007	**Yoke Base Assembly**	**8-5**
129984	**Elevation/ Reflector Assembly**	**8-6**
129264	**ST14M General Assembly**	**8-7**
129277	**ST14M System Block Diagram**	**8-8**
129280	**ST14D General Assembly**	**8-9**
129279	**ST14D Electronics Assembly**	**8-10**
129283	**Elevation/Reflector Assembly**	**8-12**
130203	**ST14D System Block Diagram**	**8-13**
129284	**ST14E General Assembly**	**8-14**
129288	**ST14E Electronics Assembly**	**8-15**
129285	**Elevation/Reflector Assembly**	**8-17**
130576	**ST14E System Block Diagram**	**8-18**

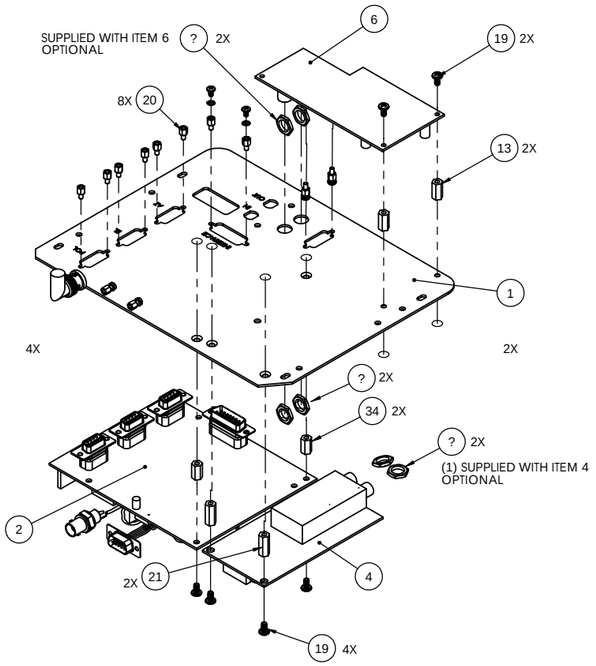
THIS PAGE INTENTIONALLY LEFT BLANK

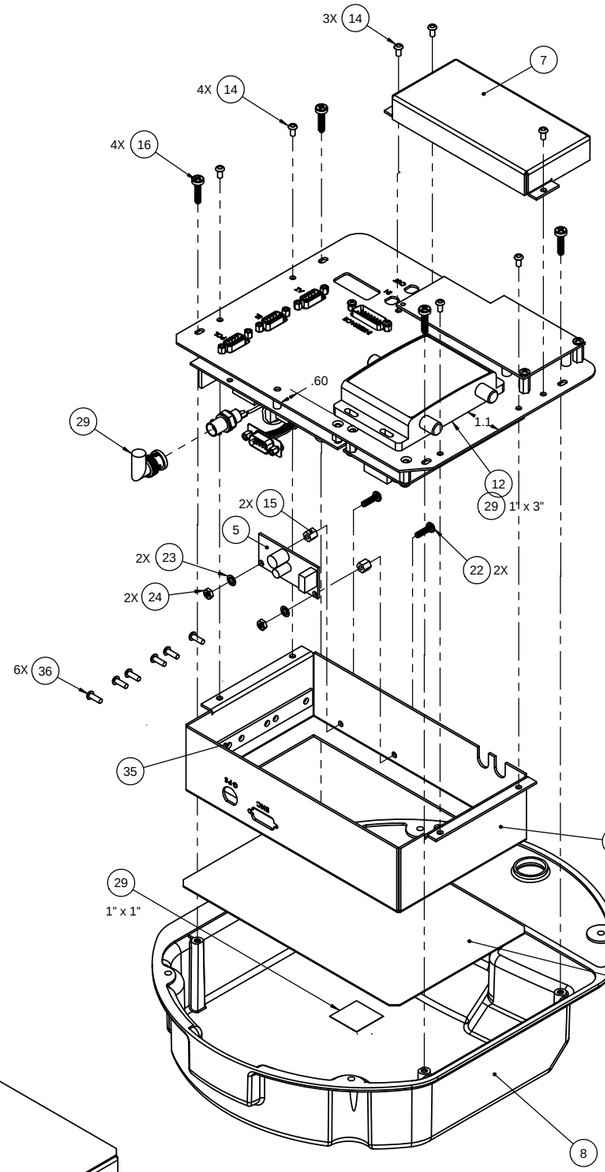
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Comant Industries, inc. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF Comant Industries, inc. IS PROHIBITED.

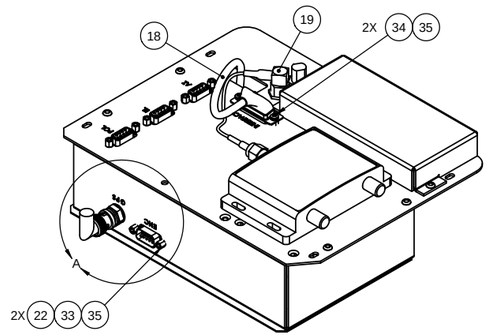
NOTES: UNLESS OTHERWISE SPECIFIED.

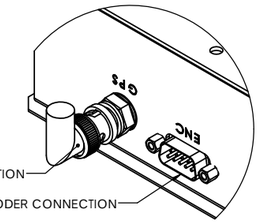
1. ASSEMBLE PER AI ST129000

REVISIONS				
LTR	DESCRIPTION		DATE	APPROVAL
A	RELEASED DRAWING		03/24/09	DH 04/03/09
B	REF ECN 09-038	MN	06/04/09	DH 06/09/09
C	REF ECN 09-068			

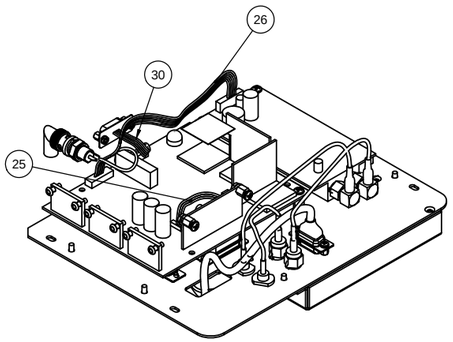


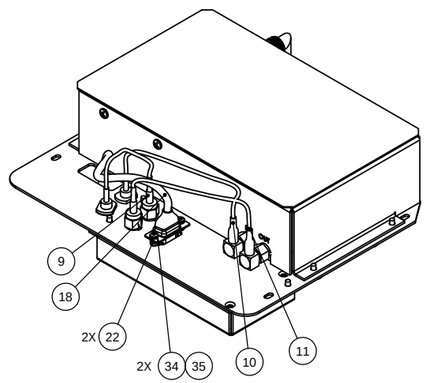






DETAIL A
SCALE 1 : 1





PART No. ST129000

QTY	ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL
3	37	119967	NUT, HEX, PANEL, 3/8-32	
6	36	ST130759-1	RIVET BLIND 1/8" DIA X 3/8" LG	
1	35	ST130986	BRACKET, PCU TO BOX	
2	34	ST121228-3062	STANDOFF,HEX,F/F 6-32X .44L	
6	35	ST114581-005	WASHER, SPRING LOCK, #4, S.S.	
4	32	ST114588-105	SCREW, PAN HD, PHIL, 4-40 x 3/16 S.S.	
2	33	ST119961-005	NUT, HEX SMALL PATTERN, 4-40, S.S.	
1	30	ST129276	ELECTRONICS LID PANEL	
1	29	ST129275-1	CONNECTOR, 90 DEG BNC	2 PIECES 1) 1" x 1" 2) 1" x 3"
1	28	ST125244-1	HARDNESS ASS'Y, ENCODER	
1	27	ST124077-5024	TAPE, ADHESIVE VHB	
1	26	ST125968-2	HARNESS ASS'Y. PCU TO RECEIVER	
1	25	ST126544-2	HARNESS ASS'Y. PCU 5V	
2	24	ST119961-007	NUT, HEX, 6-32 SMALL PATTERN	
2	23	ST119952-007	WASHER, STAR, INTERNAL TOOTH #6 S.S.	
2	22	ST114588-148	SCREW,PAN HD,PHIL,6.32 X 1/2,S.S.	
2	21	ST121228-3092	STANDOFF, HEX, F/F, 6-32 X.62L	
12	20	ST110941-3	SCREW, JACK, 4-40 X 5/16	
6	19	ST114588-144	SCREW, PAN HD, PHIL 6-32 X 1/4, S.S.	
1	18	ST129003	CABLE 90F TO 90F STACKER TO RF	
1	17	ST129001	CABLE DE-9M TO DA-15F	
4	16	ST128987-1	SCREW,M4-1.75 X 17.5MM TORX T-20	
2	15	ST121228-3032	STANDOFF,HEX,F/F 6-32 X .25L	
7	14	ST129010	RIVET BLIND 1/8" DIA X 1/4"	
2	13	ST121228-3072	STANDOFF,HEX,F/F 6-32X .50L	
1	12	ST125171-1	RF STACKER, L-BAND, 500 MHZ	
1	11	ST128992-1	CABLE-TUNER OUT JUMPER	
1	10	ST128991-1	CABLE-TUNER IN JUMPER	
1	9	ST128990-1	CABLE-FSK OUT JUMPER	
1	8	ST128962-1	ELECTRONICS COVER,PCU	ABS
1	7	ST128973-1	ENCLOSURE,FSK	5052-H32 PER QQ-A-250/8
1	6	ST125944-1	PCB ASS'Y MODEM, FSK,ADE,ST14	
1	5	ST126248-5	PCU ASSY,DC-DC CONVERTER	
1	4	ST122307-4	DVB RECEIVER ASSY	
1	3	ST128972-1	ENCLOSURE, PCU	5052-H32 PER QQ-A-250/8
1	2	ST128981	PCU ASSEMBLY	
1	1	ST128974-1	MTG PANEL,ELECTRONICS	

PARTS LIST

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS
.X ± .03 .XX ± .01 .XXX ± .005
FRACTIONS ± 1/32 ANGLES ± 1°
MACHINE FINISH 125✓ PER ANSI- B46.1
REMOVE BURRS AND SHARP EDGES .015 MAX
MEET DIMENSIONS BEFORE PLATING
DIMENSIONS ARE PER ASME Y14.5M
MATERIAL : --
DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS		DATE
DRAWN	J.LITZINGER	1/6/09
CHECK	P.PERREAULT	4/3/09
ENGR	D.HOLLOWAY	4/2/09
MFG	J.JONES	4/2/09
QC	S.ADAMS	4/3/09

Comant Industries, Inc.

ST14M ELECTRONICS ASSEMBLY

DWG SIZE	CODE IDENT	DWG. NO.	REV.
D	51351	ST129000	C

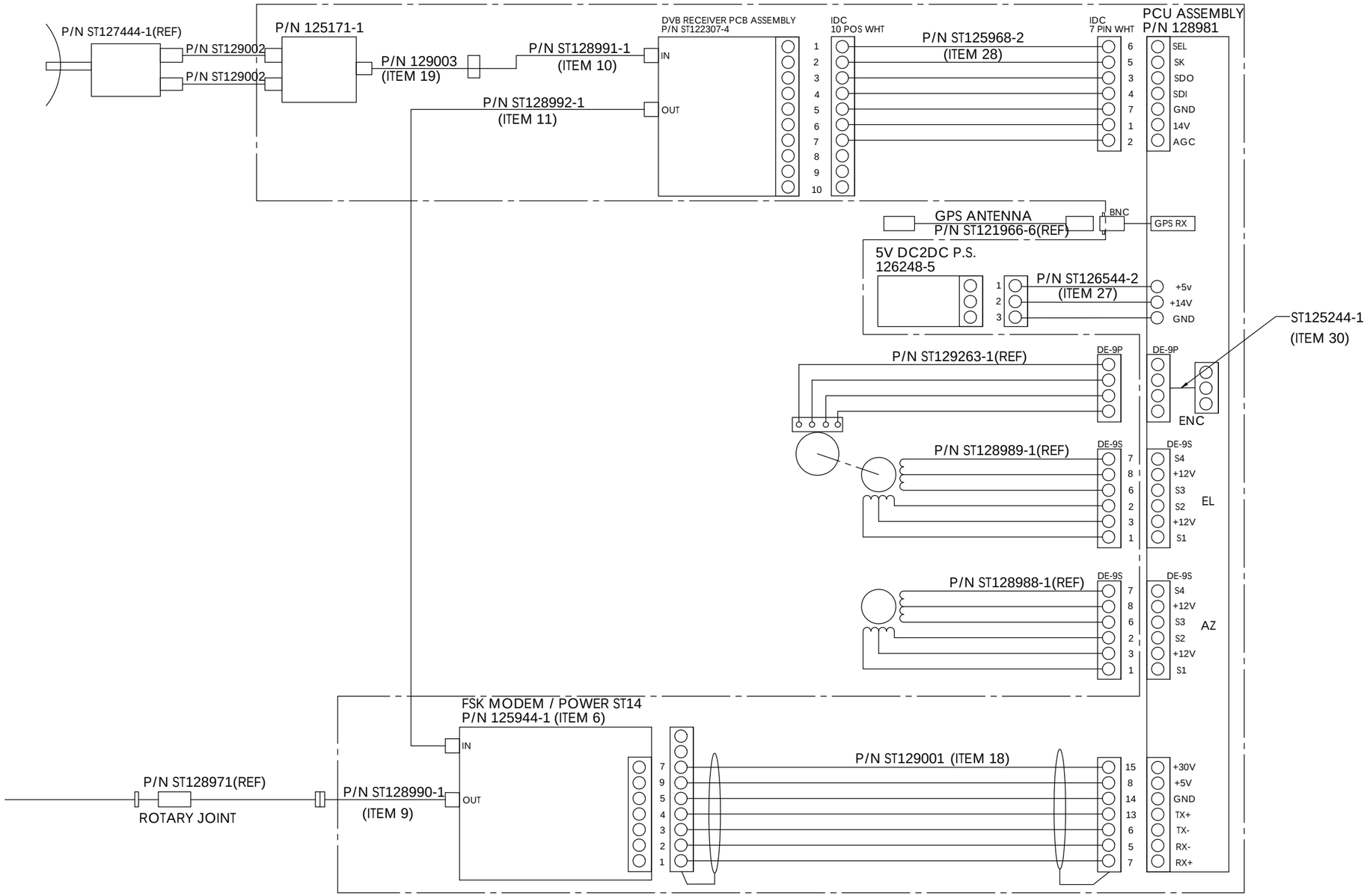
SCALE: -- CAD FILE: -- SHEET : 1 OF 2

REV. C
DWG NO ST129000

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Comant Industries, inc. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF Comant Industries, inc. IS PROHIBITED.

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVAL
	SEE REVISIONS ON SHEET 1		

NOTES:



WIRING DIAGRAM

--	ITEM NO	PART NUMBER	DESCRIPTION	MATERIAL / SPECIFICATIONS
QTY REQD	PARTS LIST			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON DECIMALS .X ± .03 .XX ± .01 .XXX ± .005 FRACTIONS ± 1/32 ANGLES ± 1° MACHINE FINISH 125✓ PER ANSI- B46.1 REMOVE BURRS AND SHARP EDGES .015 MAX MEET DIMENSIONS BEFORE PLATING DIMENSIONS ARE PER ASME Y14.5M MATERIAL : --	CONTRACT NO.	Comant Industries, Inc.	
	APPROVALS / DATE	ST14M ELECTRONICS ASSEMBLY	
	DRAWN		
	CHECK		
	ENGR		
	MFG		
DO NOT SCALE DRAWING	QC		

DWG SIZE	CODE IDENT	DWG. NO.	REV.
D	51351	ST129000	C

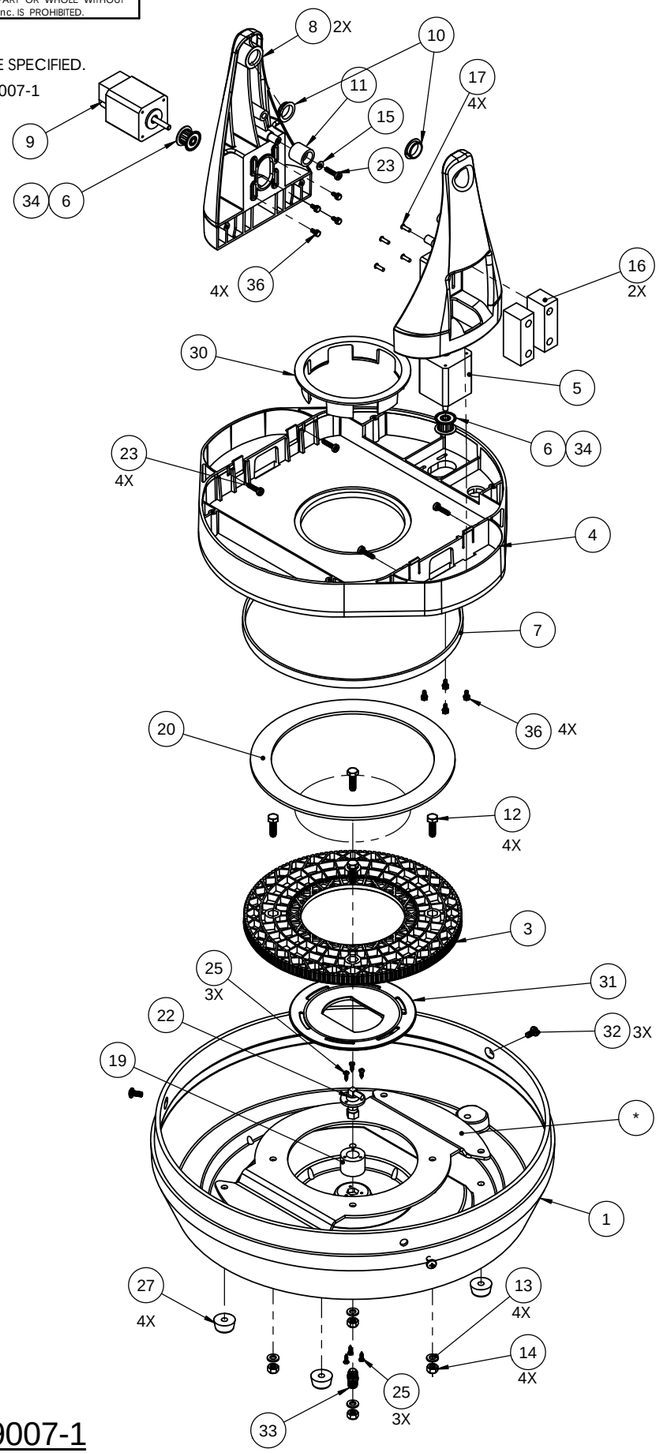
SCALE: -- | CAD FILE: -- | SHEET : 2 OF 2

REV C
DWG NO 129000

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Comant Industries, inc. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF Comant Industries, inc. IS PROHIBITED.

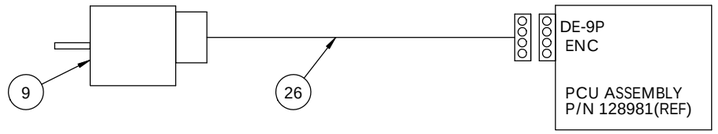
NOTES: UNLESS OTHERWISE SPECIFIED.

1. ASSEMBLE PER AI ST129007-1



PART No. ST129007-1

REVISIONS				
LTR	DESCRIPTION		DATE	APPROVAL
A	RELEASED DRAWING		3/20/09	DH 4/03/09
B	REF ECN 09-036	MN	6/02/09	DH 6/03/09
C	REF ECN 09-053	MN	7/10/09	DH 7/15/09
D	REF ECN 09-071	MN	8/26/09	DH 8/26/09
E	REF ECN 09-095	MN	9/28/09	RG 9/28/09
F	REF ECN 09-106			



QTY	ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL
8	36	ST130865-A008	SCREW, HEX HD, M3 X 3mm, SEMS	
	35	DELETED		
2	34	ST114590-142	SCREW, SOCKET SET-CUP, 6-32 x1/8, SS	
1	33	ST129269	ADAPTER, TYPE F, F TO F	
3	32	ST119745-320	SCREW, PAN HD, PHIL, M5 X 10mm	
1	31	ST128968-1	BRG SPRING PLATE	POM COPOLYMER
1	30	ST128967-1	BRG CENTER, RETAINER	POM COPOLYMER
	29	DELETED		
	28	DELETED		
4	27	ST129273-1	BUMPER 7/8 DIA, BLACK	
1	26	ST129263-1	HARNESS ASS'Y ENCODER	
6	25	ST120490-140	SCREW,SHT METAL #4 x 3/8 CRES	
	24	DELETED		
5	23	ST128987-1	SCREW,M4-1.75 X 17.5MM TORX T-20	
1	22	ST129289	ROTARY JOINT	
1	20	ST128977-2	BEARING,AZ	
1	19	ST129262-1	STANDOFF-ROTARY JOINT	
4	17	ST129009	POP RIVET CRES 1/8 DIA X .64	
2	16	ST128985-1	COUNTERWEIGHT, .44lb	
1	15	ST114580-230	WASHER FLAT, M4 18-8 SS	
4	14	ST128997	LOCKNUT NYLON,INSERT M6-1.0	
4	13	ST128999	WASHER FLAT,M6, 18-8	
4	12	ST128998	SCREW,HEX HEAD CAP,CRES, M6-1.0X20	
1	11	ST128978-1	IDLER PULLEY	POM HOMOPOLYMER
2	10	ST128986-1	CLIP BEARING	
1	9	ST128989-1	NEMA 17, HIGH TORQUE STEP	
2	8	ST128963-1	ARM,YOKE	PA 6/12 43% GFR
1	7	ST116903-14537	BELT,TIMING,1/5 PITCH,145 GROOVES	290XL MATERIAL
2	6	ST129278-1	PULLEY,10T, MODIFIED	
1	5	ST128988-1	NEMA 17, HIGH TORQUE STEP MOTOR	
1	4	ST128961-1	BASE,YOKE	PA 6/12 43% GFR
1	3	ST128966-1	AZIMUTH PULLEY	PA 6/12 43%GFR
1	2	ST128976-1	MTG BRACKET, AZ	
1	1	ST128970-1	RADOME, 16" BOTTOM	

PARTS LIST

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS
.X ± .03 .XX ± .01 .XXX ± .005
FRACTIONS ± 1/32 ANGLES ± 1°
MACHINE FINISH 125 PER ANSI- B46.1
REMOVE BURRS AND
SHARP EDGES .015 MAX
MEET DIMENSIONS BEFORE PLATING
DIMENSIONS ARE PER ASME Y14.5M

MATERIAL :

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS		DATE
DRAWN	J.LITZINGER	11/21/08
CHECK	P.PERREAULT	4/3/09
ENGR	D.HOLLOWAY	4/2/09
MFG	J.JONES	4/2/09
QC	S.ADAMS	4/3/09

Comant Industries, Inc.

YOKE BASE ASSEMBLY

DWG SIZE	CODE IDENT	DWG. NO.	REV.
C	51351	ST129007	F

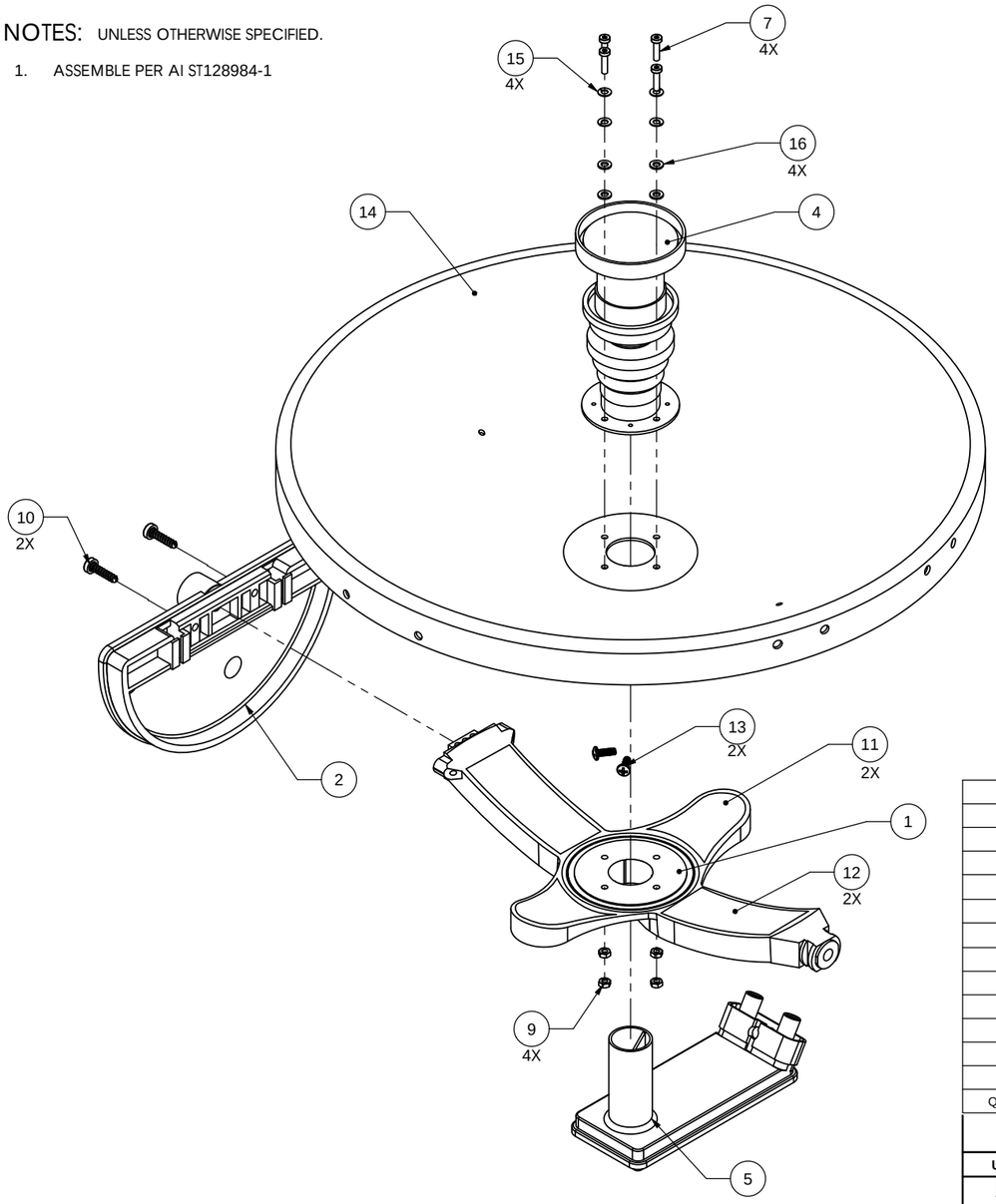
SCALE: 1:4 | CAD FILE: | SHEET : 1 OF 1

DWG NO ST129007 REV. F

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Comant Industries, inc. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF Comant Industries, inc. IS PROHIBITED.

NOTES: UNLESS OTHERWISE SPECIFIED.

1. ASSEMBLE PER AI ST128984-1



PART No. ST128984-1

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVAL
A	RELEASED DRAWING	3/19/09	DH 4/03/09
B	REF ECN 09-113		

QTY.	ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL
2	13	ST114588-146	SCREW, PAN HD, PHIL, 6-32 x 3/8, S.S.	
2	12	ST128979-1	TAPE, VHB DIECUT	
2	11	ST128979-2	TAPE, VHB DIE CUT	
2	10	ST128987-1	SCREW,M4-1.75 X 17.5MM TORX T-20	
4	9	ST129006-1	NUT,HEX,M3,CRES	
4	16	B18.22M - Plain washer, 3 mm, narrow		
4	7	ST129005-1	SCREW,LOW HEAD SOCKET CAP M3 SIZE	
4	15	M3		
1	5	ST127444-1	LNBF MOD, DUAL DBS, CAL AMP	
1	4	ST125824	FEED,14" ANTENNA,COASTAL 14	-
1	14	ST125686	REFLECTOR. 14.5 INCH MACHINING	
1	2	ST128965-1	ELEVATION PULLEY	PA 6/12 43%GFR
1	1	ST128964-1	ELEVATION BRACKET	PA 6/12 43%GFR

PARTS LIST

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS
.X ± .03 .XX ± .01 .XXX ± .005
FRACTIONS ± 1/32 ANGLES ± 1°
MACHINE FINISH 125 PER ANSI- B46.1
REMOVE BURRS AND
SHARP EDGES .015 MAX
MEET DIMENSIONS BEFORE PLATING
DIMENSIONS ARE PER ASME Y14.5M
MATERIAL :
DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS		DATE
DRAWN	J.LITZINGER	11/20/08
CHECK	P.PERRAULT	03/04/09
ENGR	D.HOLLOWAY	04/02/09
MFG	J.JONES	04/02/09
QC	S.ADAMS	04/03/09

Comant Industries, Inc.

ELEVATION/REFLECTOR ASS'Y

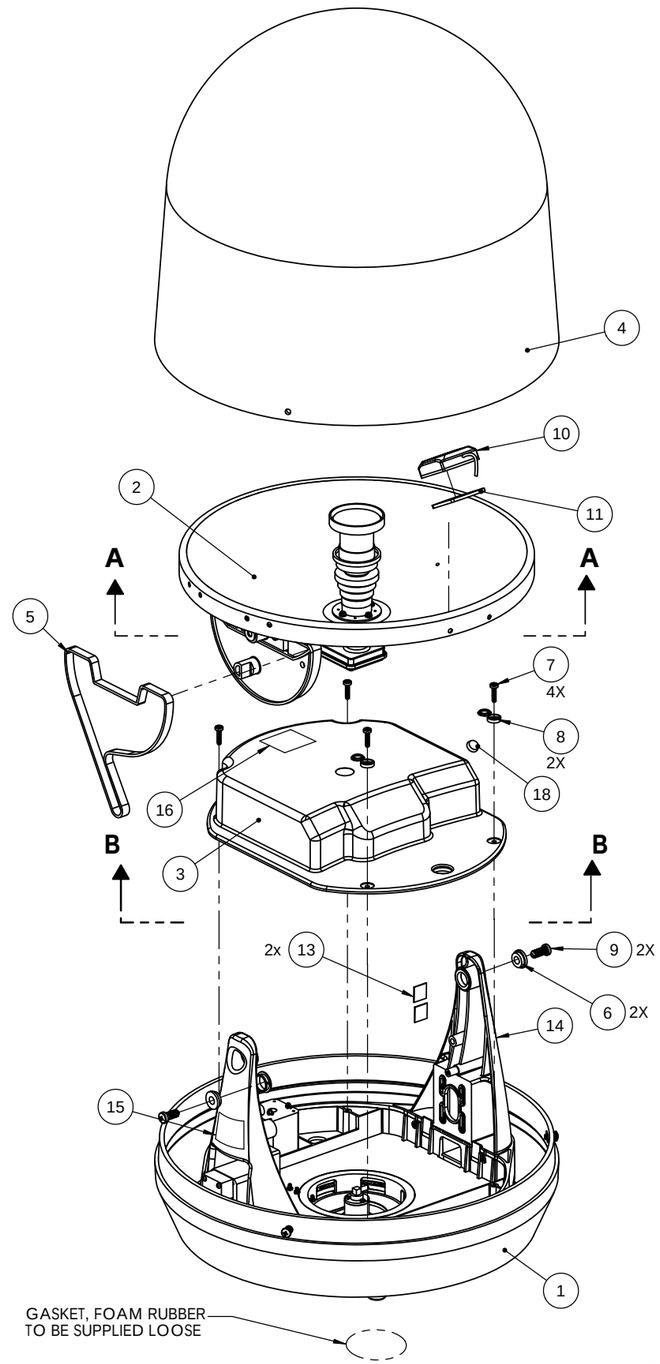
DWG SIZE	CODE IDENT	DWG. NO.	REV.
C	51351	ST128984	B

SCALE: 1:2 | CAD FILE: 128984 | SHEET : 1 OF 1

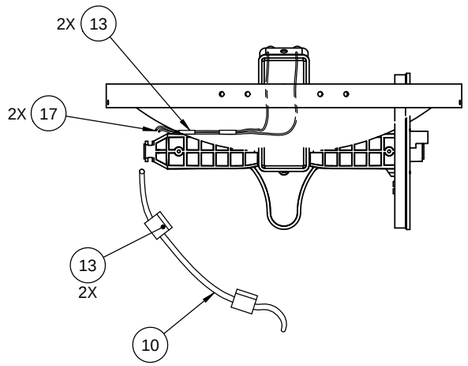
DWG NO ST128984 REV. B

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Comant Industries, inc. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF Comant Industries, inc. IS PROHIBITED.

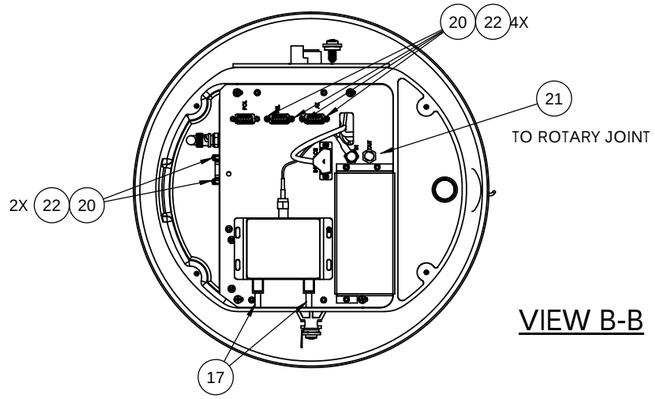
NOTES: UNLESS OTHERWISE SPECIFIED.
1. ASSEMBLE PER AI ST129264



PART No.ST129264



VIEW A-A



VIEW B-B

REVISIONS				
LTR	DESCRIPTION		DATE	APPROVAL
A	RELEASED DRAWING		3/24/09	DH 4/03/09
B	REF ECN 09-037	MN	6/5/09	DH 6/5/09
C	REF ECN 09-057	MN	7/30/09	DH 7/30/09
D	REF ECN 09-098	MN	9/30/09	RG 9/30/09
E	REF ECN 09-105			

QTY.	ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL
6	22	ST114581-005	WASHER, SPRING LOCK, #4, S.S.	
1	21	ST110026-3	ADAPTER, F, 90 °	
6	20	ST114588-105	SCREW, PAN HD, PHIL, 4-40 x 3/16 S.S.	
	19	DELETED		
1	18	ST129272-1	BUMPER 1/2 DIA, CLEAR	
2	17	ST129002	CABLE ASSY-F(M) 90° - F (M) STRAIGHT	
1	16	ST110959-2	DECAL,MODEL & P/N, LARGE	
1	15	ST118255	LABEL,MADE IN USA	
1	14	ST117567-2	DECAL,CE CERTIFICATION, 3/4 IN.	
6	13	ST128993-1	NYLON WIRE CLIP	
2	12	ST128994-1	NYLON SHIPPING LOCK	
1	11	ST128979-3	VHB - DIECUT FOR GPS	
1	10	ST121966-6	GPS ANTENNA RETERMINATED 32"	
2	9	ST128995-1	SCREW,M8-3.5 X 19.5 REMFORM	
2	8	ST129008-1	SCREW CAP HINGED, WHITE	
4	7	ST128987-1	SCREW,M4-1.75 X 17.5MM TORX T-20	
2	6	ST128980-1	ELEVATION PIVOT	POM HOMOPOLYMER
1	5	ST116903-11537	BELT,TIMING,1/5 PITCH,115 GROOVES	230XL
1	4	ST128969-1	RADOME, TOP, 16"	
1	3	ST129000	ST14M ELECTRONICS ASSEMBLY	-
1	2	ST128984-1	ELEVATION/REFLECTOR ASS'Y	
1	1	ST129007-1	YOKE BASE ASSEMBLY	-

PARTS LIST

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS
.X ± .03 .XX ± .01 .XXX ± .005
FRACTIONS ± 1/32 ANGLES ± 1°
MACHINE FINISH 125 PER ANSI- B46.1
REMOVE BURRS AND
SHARP EDGES .015 MAX
MEET DIMENSIONS BEFORE PLATING
DIMENSIONS ARE PER ASME Y14.5M
MATERIAL :
DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS		DATE
DRAWN	J.LITZINGER	01/06/09
CHECK	P.PERREAULT	4/3/09
ENGR	D.HOLOWAY	4/3/09
MFG	J.JONES	4/3/09
QC	S.ADAMS	4/3/09

Comant Industries, Inc.

ST14M GENERAL ASSEMBLY

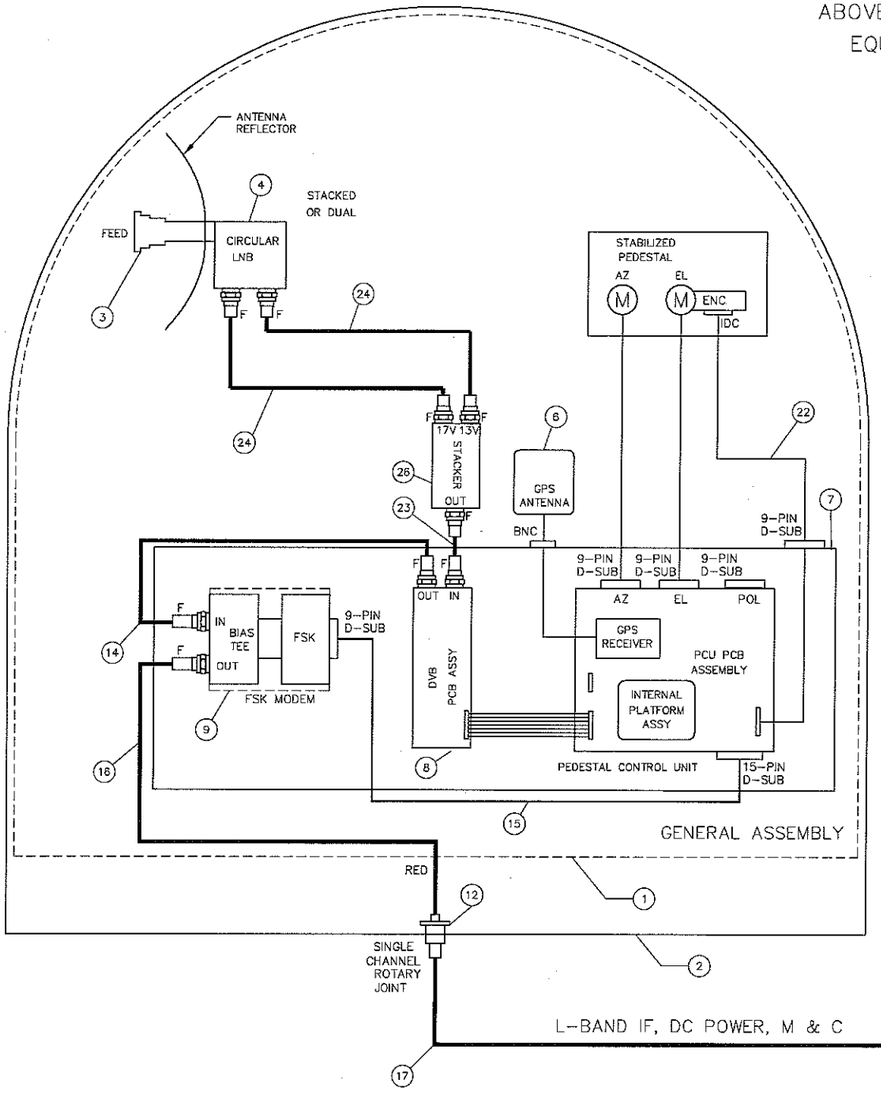
DWG SIZE	CODE IDENT	DWG. NO.	REV.
C	51351	ST129264	E

SCALE: -- CAD FILE: -- SHEET : 1 OF 1

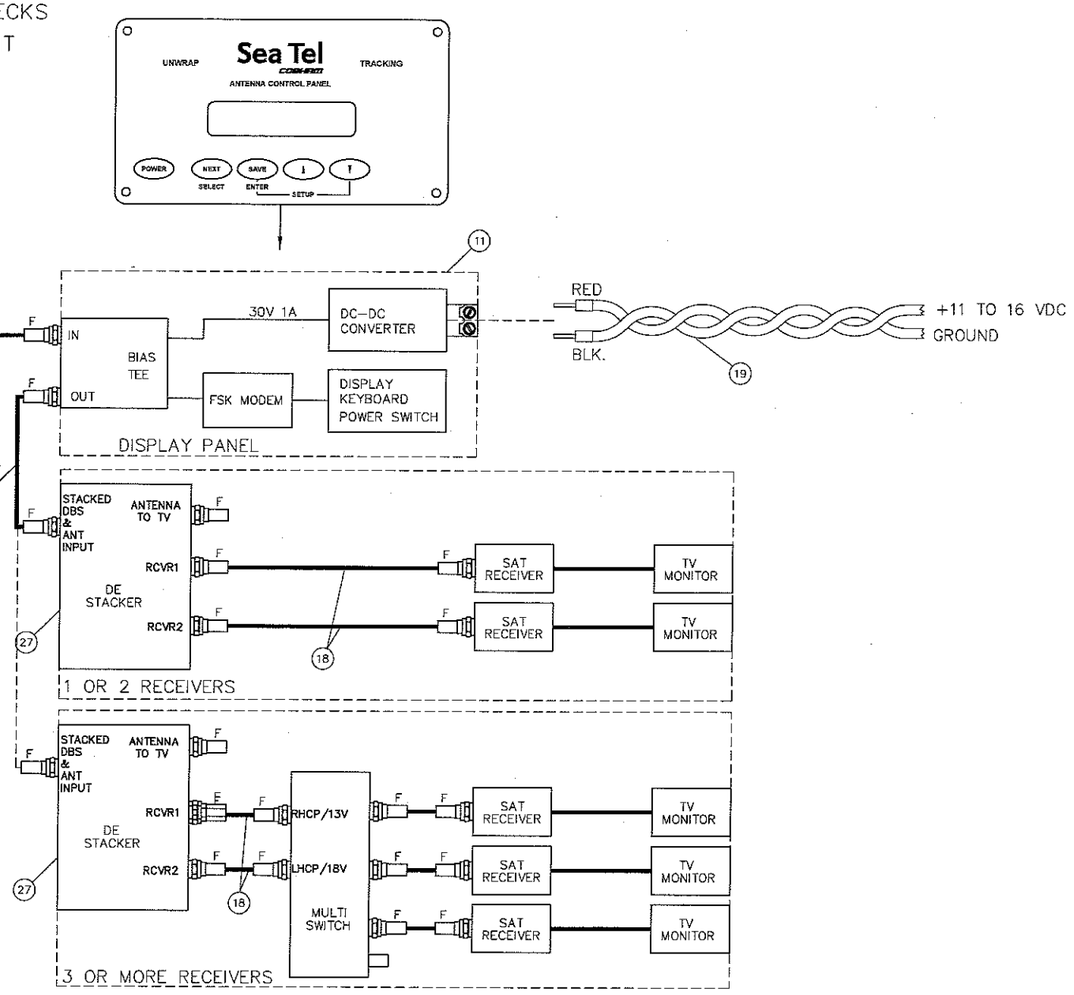
DWG NO ST129264 REV. E

REVISION HISTORY				
REV	ECO#	DATE	DESCRIPTION	BY
A	N/A	06-30-09	LABEL "+11 TO 16 VDC " WS "+12 TO 30 VDC". REV WS X1. INTIAL RELEASED.	SL

ABOVE DECKS EQUIPMENT



BELOW DECKS EQUIPMENT



REFERENCE DRAWINGS

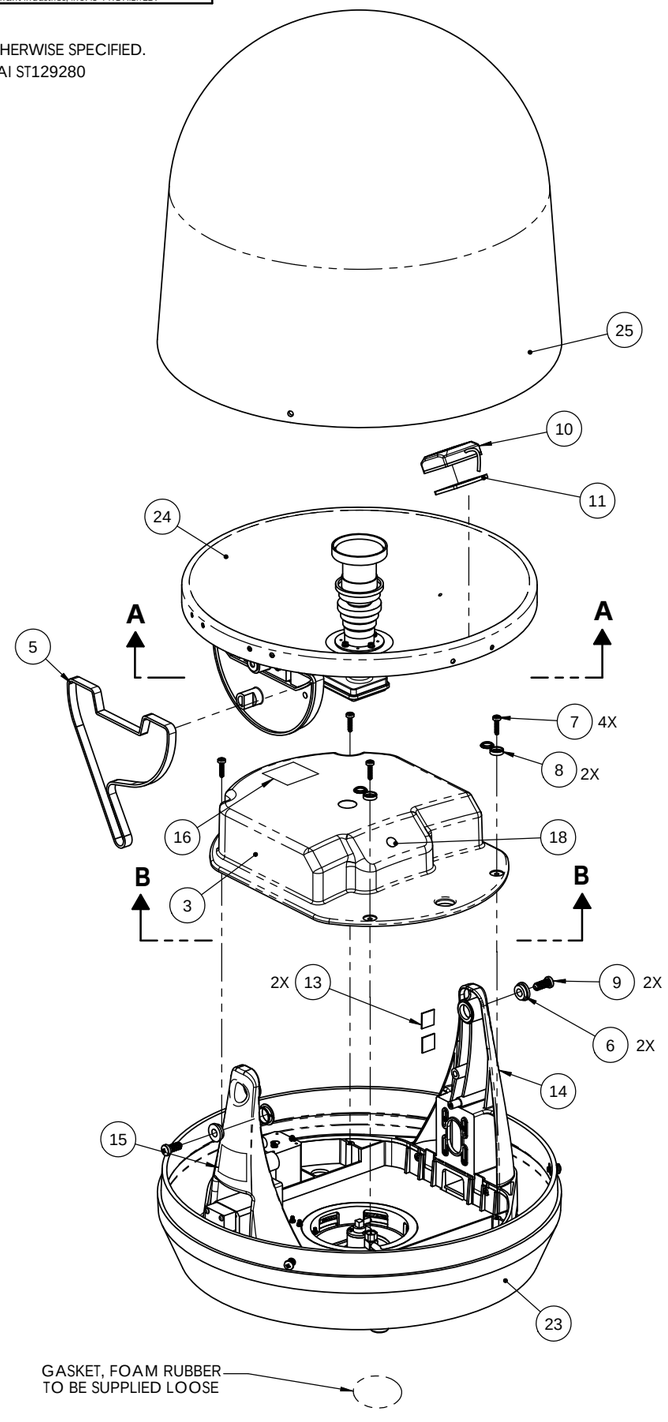
126766 SCHEMATIC, ANTENNA SYSTEM
128983 SYSTEM, ST14M

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. X.X = ±.050 X.XX = ±.020 X.XXX = ±.005 ANGLES: ±.5° INTERPRET TOLERANCING PER ASME Y14.5M – 1994	DRAWN BY: Simon L	Sea Tel COBHAM Tel. 925-798-7979 Fax. 925-798-7986	
	DRAWN DATE: 05-13-09		
	APPROVED BY: RCD	TITLE: SYSTEM, BLOCK DIAGRAM ST14M	
MATERIAL: N/A	APPROVED DATE: 6/30/09		
FINISH: N/A	SIZE: B / SCALE: NONE	DRAWING NUMBER: 129277	REV: A
3rd ANGLE PROJECTION	FIRST USED:	SHEET NUMBER: 1 OF 1	

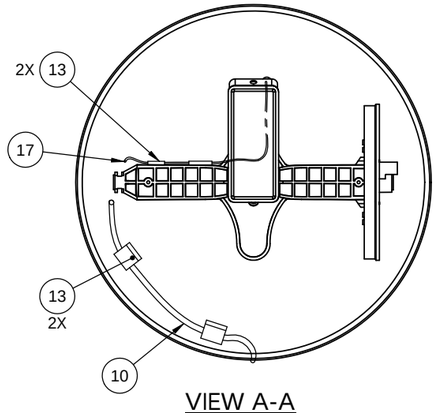
DOCUMENT NO. 124225-4_A

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Comant Industries, inc. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF Comant Industries, inc. IS PROHIBITED.

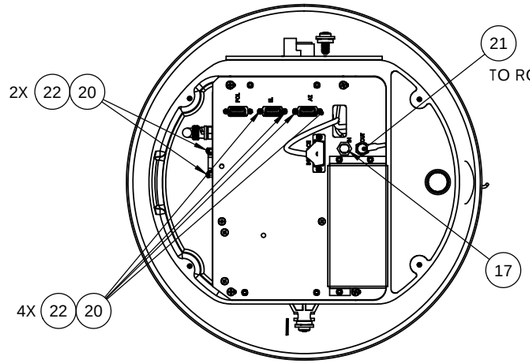
NOTES: UNLESS OTHERWISE SPECIFIED.
1. ASSEMBLE PER AI ST129280



PART No.ST129280



VIEW A-A



VIEW B-B

REVISIONS				
LTR	DESCRIPTION		DATE	APPROVAL
EA	RELEASED DRAWING	MN	5/12/09	DH 5/12/09
B	REF ECN 09-037	MN	6/02/09	DH 6/03/09
C	REF ECN 09-061	MN	7/30/09	DH 7/30/09
D	REF ECN 09-097	MN	9/29/09	RG 9/29/09
E	REF ECN 09-105			

QTY.	ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL
6	22	ST114581-005	WASHER, SPRING LOCK, #4, S.S.	
1	21	ST110026-3	ADAPTER, F, 90 °	
6	20	ST114588-105	SCREW, PAN HD, PHIL, 4-40 x 3/16 S.S.	
	19	DELETED		
1	18	ST129272-1	BUMPER 1/2 DIA, CLEAR	
1	17	ST129002	CABLE ASSY-F (M) 90° TO F (M) STRAIGHT	LNB TO IN
1	16	ST110959-2	DECAL,MODEL & P/N, LARGE	
1	15	ST118255	LABEL,MADE IN USA	
1	14	ST117567-2	DECAL,CE CERTIFICATION, 3/4 IN.	
6	13	ST128993-1	NYLON WIRE CLIP	
2	12	ST128994-1	NYLON SHIPPING LOCK	
1	11	ST128979-3	VHB - DIECUT FOR GPS	
1	10	ST121966-6	GPS ANTENNA RETERMINATED 32"	
2	9	ST128995-1	SCREW,M8-3.5 X 19.5 REMFORM	
2	8	ST129008-1	SCREW CAP HINGED, WHITE	
4	7	ST128987-1	SCREW,M4-1.75 X 17.5MM TORX T-20	
2	6	ST128980-1	ELEVATION PIVOT	POM HOMOPOLYMER
1	5	ST116903-11537	BELT,TIMING,1/5 PITCH,115 GROOVES	
1	25	ST128969-1	RADOME, TOP, 16"	
1	3	ST129279	ST14D ELECTRONICS ASSEMBLY	-
1	24	ST129283	ELEVATION/REFLECTOR ASS'Y	
1	23	ST129007-1	YOKE BASE ASSEMBLY	-

PARTS LIST

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS
.X ± .03 .XX ± .01 .XXX ± .005
FRACTIONS ± 1/32 ANGLES ± 1°
MACHINE FINISH 125 PER ANSI- B46.1
REMOVE BURRS AND
SHARP EDGES .015 MAX
MEET DIMENSIONS BEFORE PLATING
DIMENSIONS ARE PER ASME Y14.5M
MATERIAL :
DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS		DATE
DRAWN	M.NGUYEN	5/12/09
CHECK	J.LITZINGER	5/12/09
ENGR	D.HOLLOWAY	5/12/09
MFG	J.JONES	5/12/09
QC	S.ADAMS	5/12/09

Comant Industries, Inc.

ST14D GENERAL ASSEMBLY

DWG SIZE	CODE IDENT	DWG. NO.	REV.
C	51351	ST129280	E

SCALE: 1:2 | CAD FILE: -- | SHEET : 1 OF 1

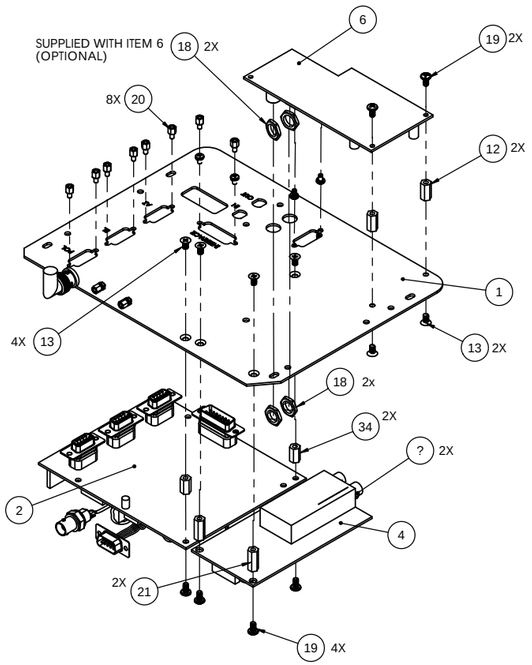
REV. E
DWG NO ST129280

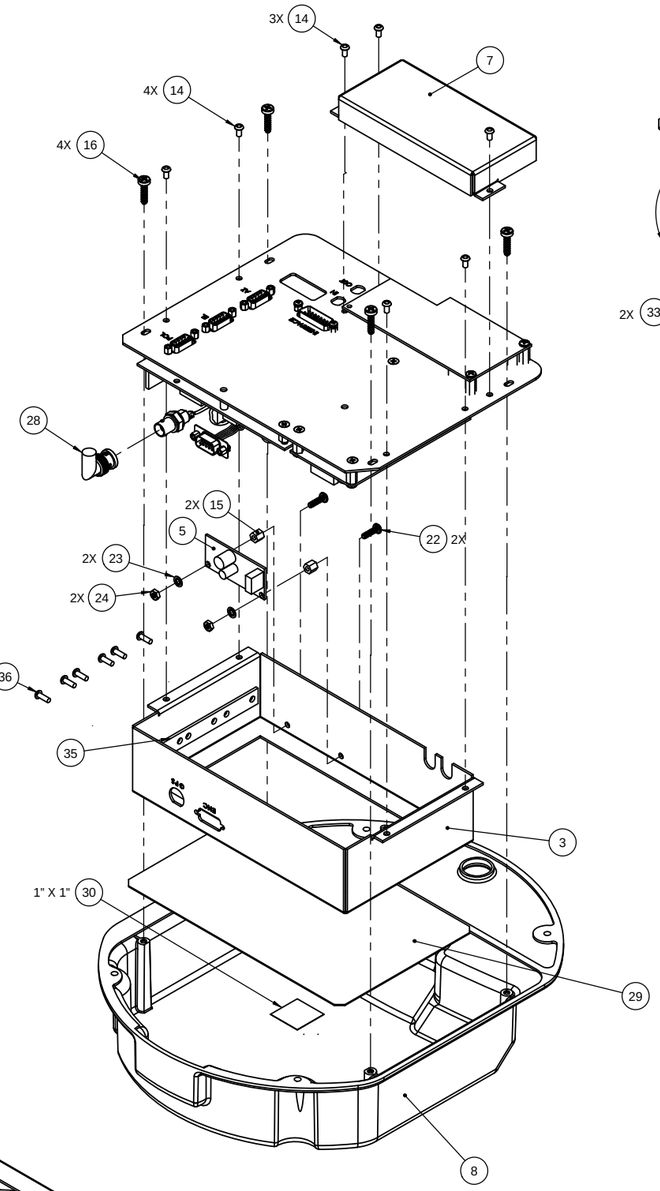
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Comant Industries, inc. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF Comant Industries, inc. IS PROHIBITED.

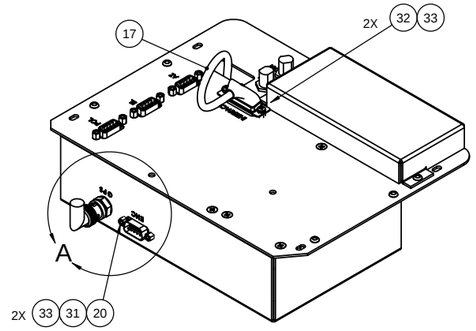
NOTES: UNLESS OTHERWISE SPECIFIED.

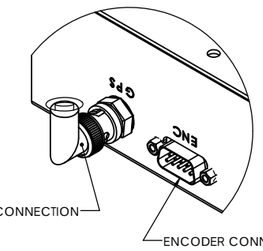
1. ASSEMBLE PER AI ST129279.

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVAL
A	RELEASED DRAWING	5/12/09	DH 5/12/09
B	REF ECN 09-076		

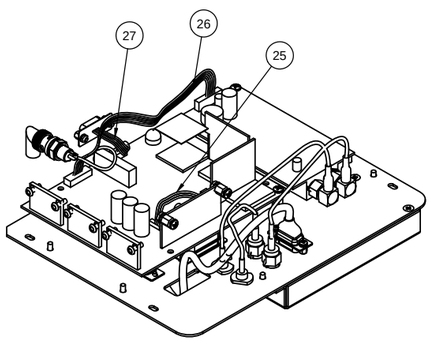


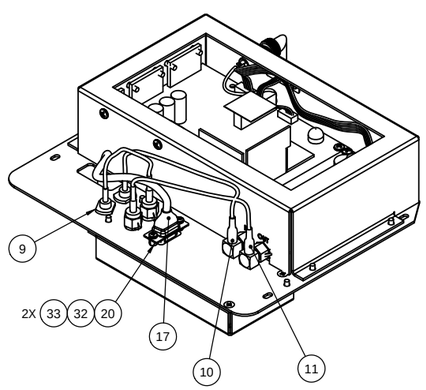






DETAIL A
SCALE 1 : 1





PART No. ST129279

QTY	ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL
6	36	ST130759-1	RIVET BLIND 1/8" DIA X 3/8" LG	
1	35	ST130986	BRACKET, PCU TO BOX	
2	34	ST121228-3062	STANDOFF,HEX,F/F 6-32X .44L	
6	33	ST114581-005	WASHER, SPRING LOCK, #4, S.S.	
4	32	ST114588-105	SCREW, PAN HD, PHIL, 4-40 x 3/16 S.S.	
2	31	ST119961-005	NUT, HEX SMALL PATTERN, 4-40, S.S.	
1	30	ST124077-5024	TAPE, ADHESIVE VHB	1" X 1"
1	29	ST129276	ELECTRONICS LID PANEL	
1	28	ST129275-1	CONNECTOR, 90 DEG BNC	
1	27	ST125244-1	HARDNESS ASS'Y, ENCODER	
1	26	ST125968-2	HARNESS ASS'Y. PCU TO RECEIVER	
1	25	ST126544-2	HARNESS ASS'Y. PCU 5V	
2	24	ST119961-007	NUT, HEX, 6-32 SMALL PATTERN	
2	23	ST119952-007	WASHER, STAR, INTERNAL TOOTH #6 S.S.	
2	22	ST114588-148	SCREW,PAN HD,PHIL,6.32 X 1/2,S.S.	
2	21	ST121228-3092	STANDOFF, HEX, F/F, 6-32 X.62L	
12	20	ST110941-3	SCREW, JACK, 4-40 X 5/16	
6	19	ST114588-144	SCREW, PAN HD, PHIL 6-32 X 1/4, S.S.	
6	18	119967	NUT, HEX, PANEL, 3/8-32	(2) NUTS SUPPLIED OPT'L
1	17	ST129001	CABLE DE-9M TO DA-15F	
4	16	ST128987-1	SCREW,M4-1.75 X 17.5MM TORX T-20	
2	15	ST121228-3032	STANDOFF,HEX,F/F 6-32 X .25L	
7	14	ST129010	RIVET BLIND 1/8" DIA X 1/4"	
6	13	ST129274-1	SCREW,PHIL,FH 6-32X.25,SS	
2	12	ST121228-3072	STANDOFF,HEX,F/F 6-32X .50L	
1	11	ST128992-1	CABLE-TUNER OUT JUMPER	
1	10	ST128991-1	CABLE-TUNER IN JUMPER	
1	9	ST128990-1	CABLE-FSK OUT JUMPER	
1	8	ST128962-1	ELECTRONICS COVER,PCU	ABS
1	7	ST128973-1	ENCLOSURE,FSK	5052-H32 PER QQ-A-250/8
1	6	ST125944-1	PCB ASS'Y MODEM, FSK,ADE,ST14	
1	5	ST126248-5	PCU ASSY,DC-DC CONVERTER	
1	4	ST122307-4	DVB RECEIVER ASSY	
1	3	ST128972-1	ENCLOSURE, PCU	5052-H32 PER QQ-A-250/8
1	2	ST128981	PCU ASSEMBLY	
1	1	ST128974-1	MTG PANEL,ELECTRONICS	

PARTS LIST

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS
.X ± .03 .XX ± .01 .XXX ± .005
FRACTIONS ± 1/32 ANGLES ± 1°
MACHINE FINISH 125✓ PER ANSI- B46.1
REMOVE BURRS AND
SHARP EDGES .015 MAX
MEET DIMENSIONS BEFORE PLATING
DIMENSIONS ARE PER ASME Y14.5M

MATERIAL : --

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS		DATE
DRAWN	M.NGUYEN	5/12/09
CHECK	P.PERRAULT	5/12/09
ENGR	D.HOLLOWAY	5/12/09
MFG	J.JONES	5/12/09
QC	S.ADAMS	5/12/09

Comant Industries, Inc.

ST14D ELECTRONICS ASSEMBLY

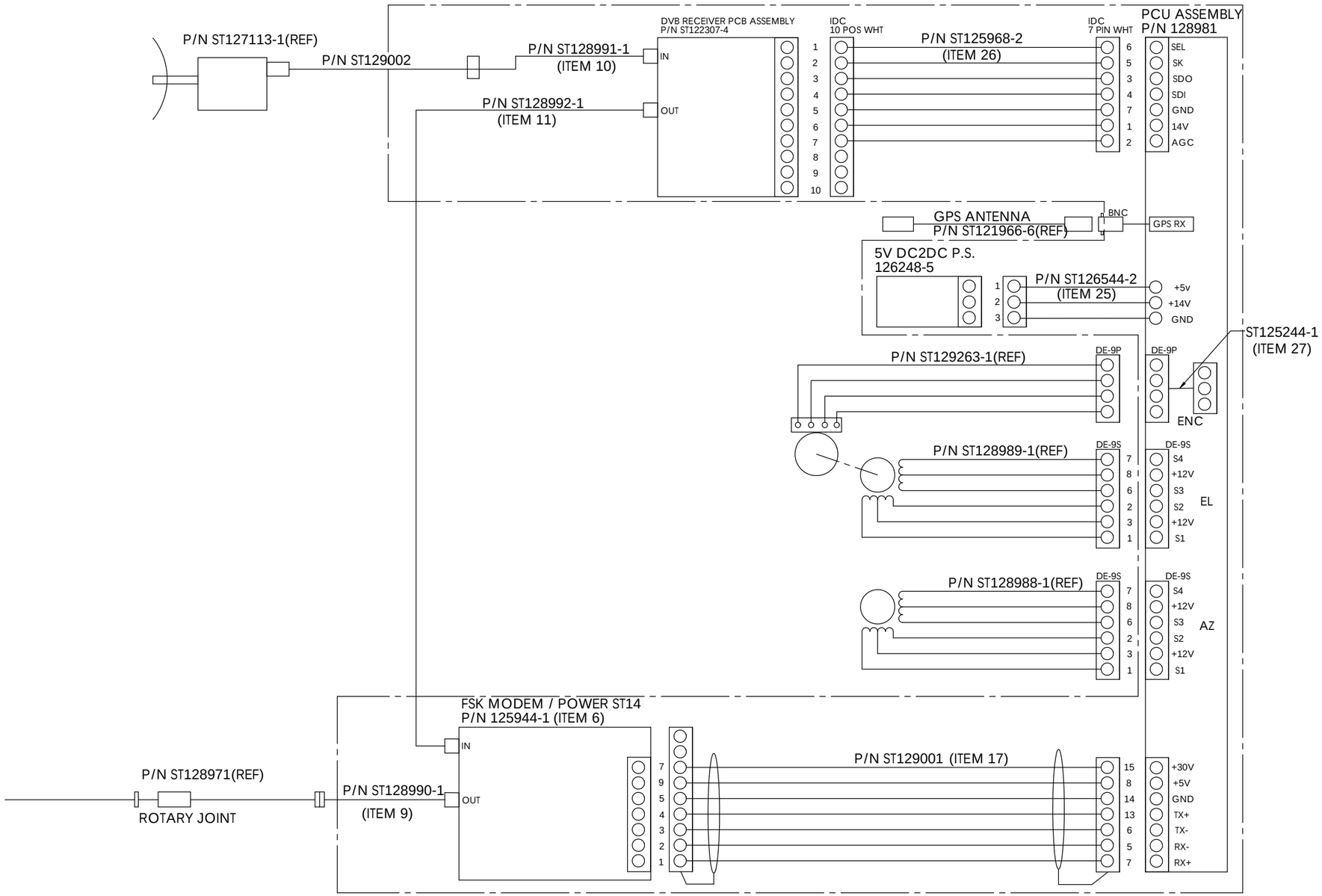
DWG SIZE	CODE IDENT	DWG. NO.	REV.
D	51351	ST129279	B

SCALE: -- CAD FILE: -- SHEET : 1 OF 2

REV: B
DWG NO: ST129279

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Comant Industries, inc. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF Comant Industries, inc. IS PROHIBITED.

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVAL
	SEE SHEET 1		



WIRING DIAGRAM

--	ITEM NO	PART NUMBER	DESCRIPTION	MATERIAL / SPECIFICATIONS
QTY REQD	PARTS LIST			

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS
.X ± .03 .XX ± .01 .XXX ± .005
FRACTIONS ± 1/32 ANGLES ± 1°
MACHINE FINISH 125✓ PER ANSI- B46.1
REMOVE BURRS AND
SHARP EDGES .015 MAX
MEET DIMENSIONS BEFORE PLATING
DIMENSIONS ARE PER ASME Y14.5M
MATERIAL : --
DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS		DATE
DRAWN		
CHECK		
ENGR		
MFG		
QC		

Comant Industries, Inc.

ST14D ELECTRONICS ASSEMBLY

DWG SIZE	CODE IDENT	DWG. NO.	REV.
D	51351	ST129279	B

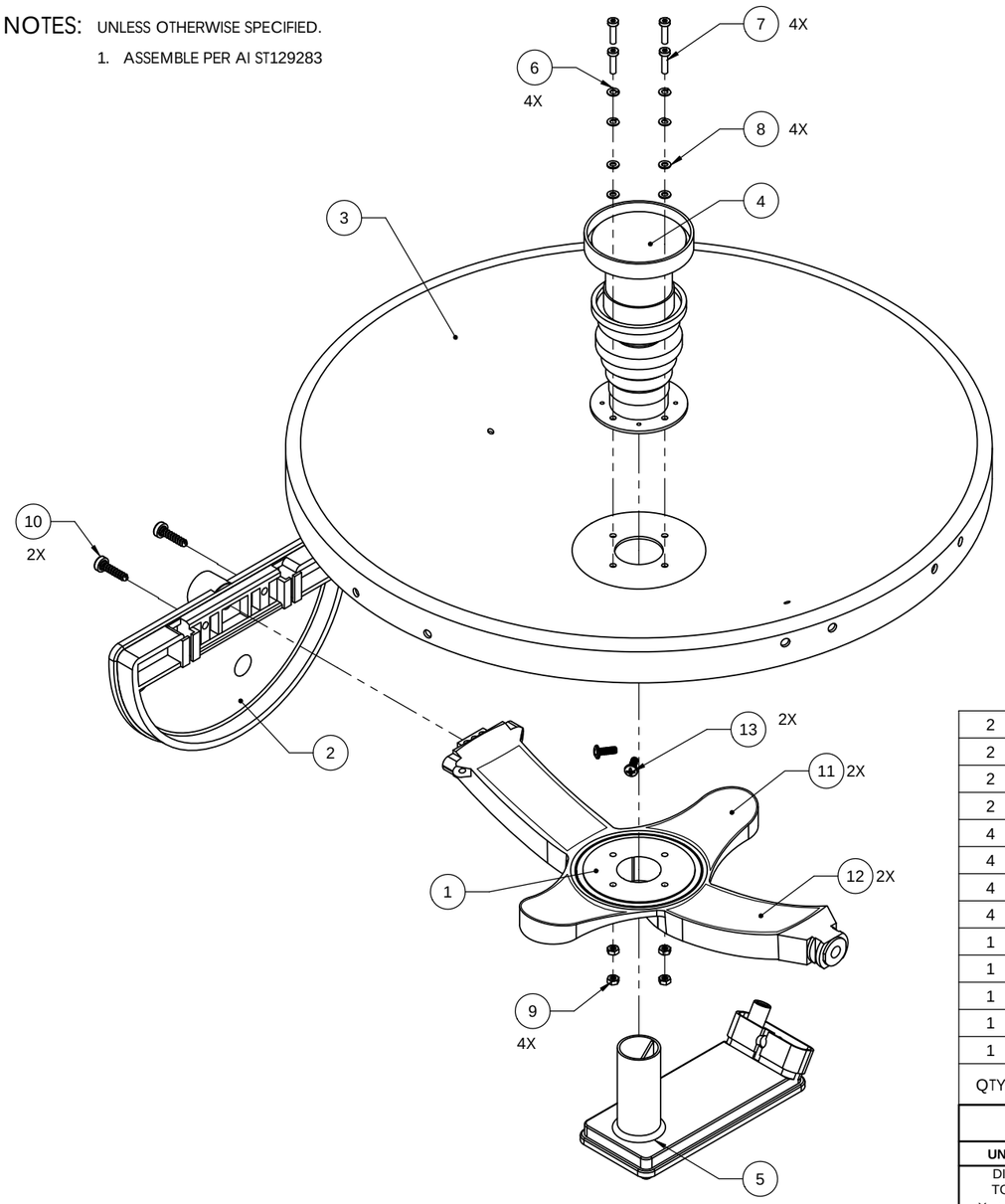
SCALE: -- CAD FILE: -- SHEET : 2 OF 2

REV. B
DWG NO. ST129279

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Comant Industries, inc. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF Comant Industries, inc. IS PROHIBITED.

NOTES: UNLESS OTHERWISE SPECIFIED.

1. ASSEMBLE PER AI ST129283



PART No. ST129283

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVAL
A	RELEASED DRAWING MN	5/12/09	DH 05/12/09
B	REF ECN 09-113		

QTY	ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL
2	13	ST114588-146	SCREW, PAN HD, PHIL, 6-32 x 3/8, S.S.	
2	12	ST128979-1	TAPE, VHB DIECUT	
2	11	ST128979-2	TAPE, VHB DIE CUT	
2	10	ST128987-1	SCREW,M4-1.75 X 17.5MM TORX T-20	
4	9	ST129006-1	NUT,HEX,M3,CRES	
4	8	ST114581-210	WASHER, SPRING LOCK M3	
4	7	ST129005-1	SCREW,LOW HEAD SOCKET CAP M3 SIZE	
4	6	ST114580-210	WASHER FLAT,M3,3.2 mm	
1	5	ST130210	LNB, DISHPRO, SINGLE, MODIFIED	
1	4	ST125824	FEED,14" ANTENNA,COASTAL 14	-
1	3	ST125686	REFLECTOR. 14.5 INCH MACHINING	
1	2	ST128965-1	ELEVATION PULLEY	PA 6/12 43%GFR
1	1	ST128964-1	ELEVATION BRACKET	PA 6/12 43%GFR

PARTS LIST

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS
.X ± .03 .XX ± .01 .XXX ± .005
FRACTIONS ± 1/32 ANGLES ± 1°
MACHINE FINISH 125 PER ANSI- B46.1
REMOVE BURRS AND
SHARP EDGES .015 MAX
MEET DIMENSIONS BEFORE PLATING
DIMENSIONS ARE PER ASME Y14.5M

MATERIAL :

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS		DATE
DRAWN	M.NGUYEN	5/12/09
CHECK	P.PERREAULT	5/12/09
ENGR	D.HOLLOWAY	5/12/09
MFG	J.JONES	5/12/09
QC	S.ADAMS	5/12/09

Comant Industries, Inc.

ELEVATION/REFLECTOR ASS'Y

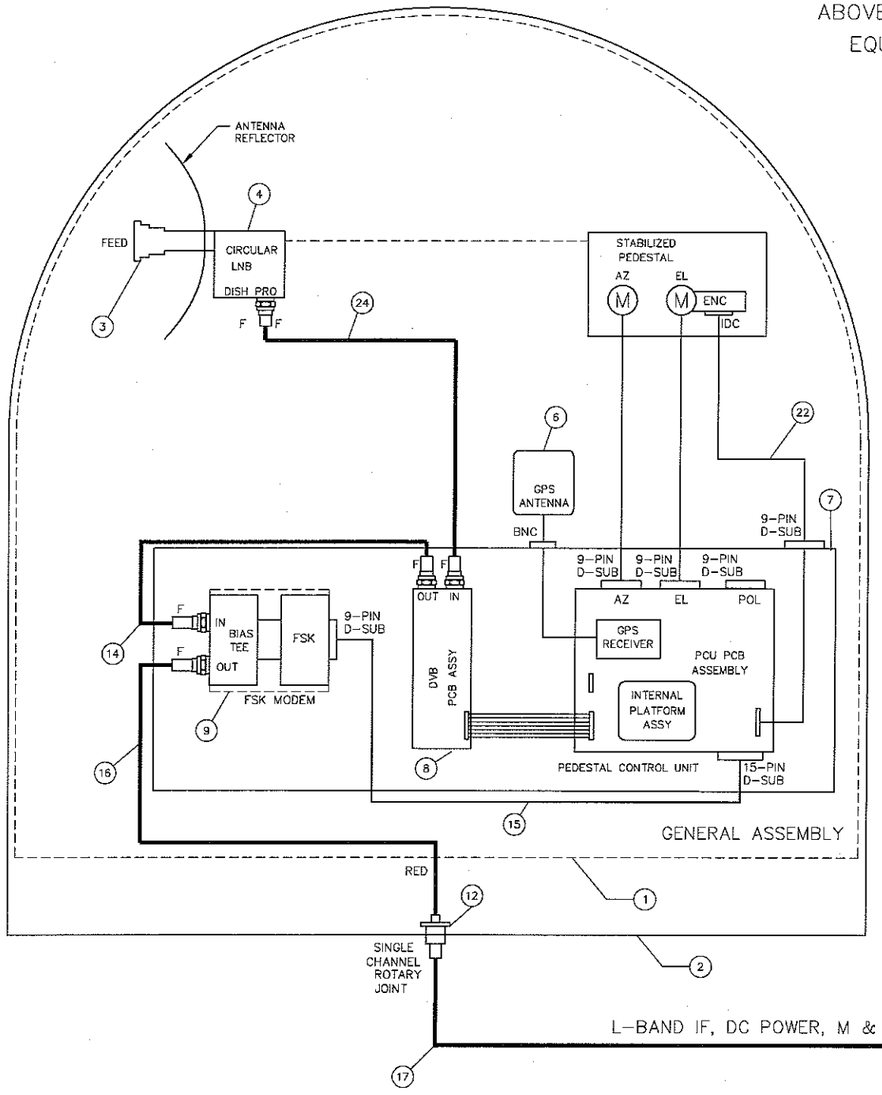
DWG SIZE	CODE IDENT	DWG. NO.	REV.
C	51351	ST129283	B

SCALE: 1:2 CAD FILE: -- SHEET : 1 OF 1

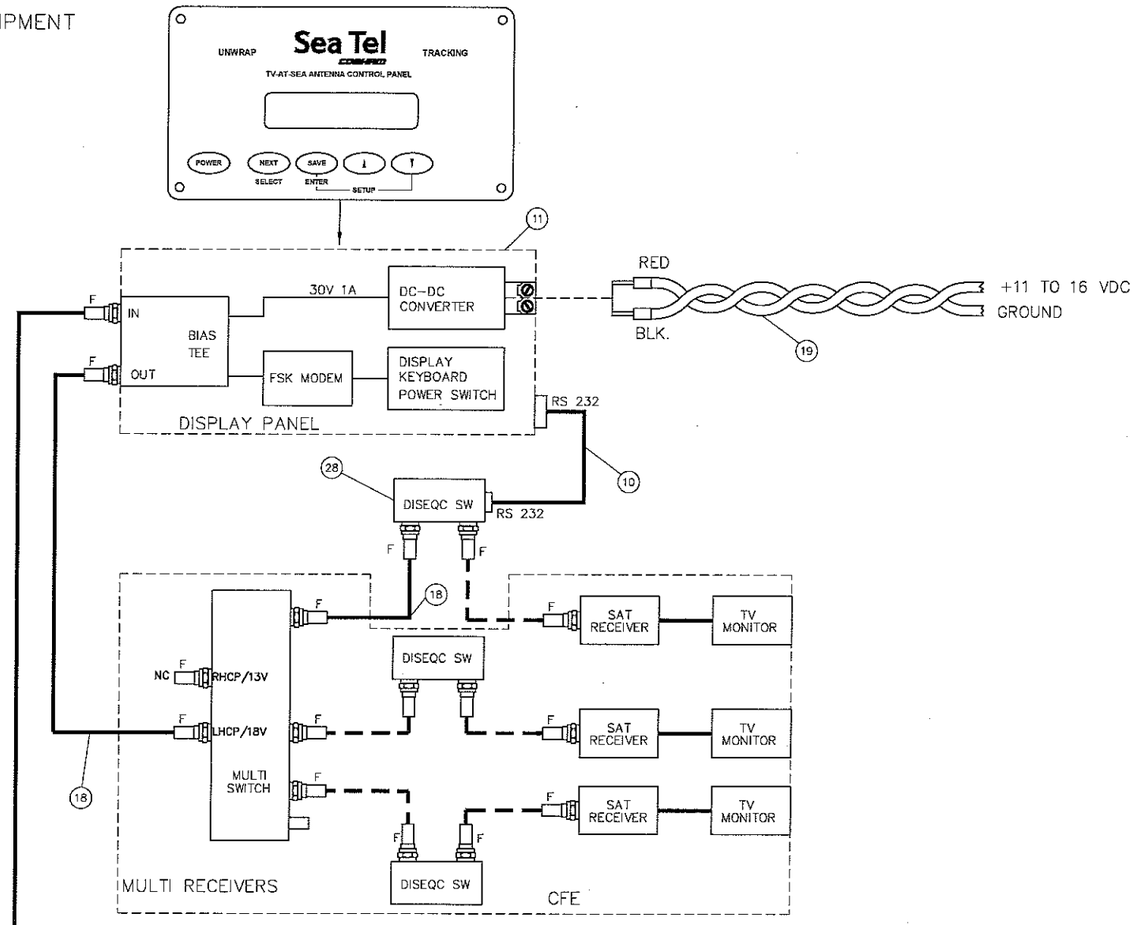
DWG NO ST129283 REV. B

REVISION HISTORY				
REV	ECO#	DATE	DESCRIPTION	BY
A	N/A	06-30-09	LABEL "+11 TO 16 VDC" WS "+12 TO 30 VDC". REV WAS X1. INITIAL RELEASED.	SL

ABOVE DECKS EQUIPMENT



BELOW DECKS EQUIPMENT



REFERENCE DRAWINGS

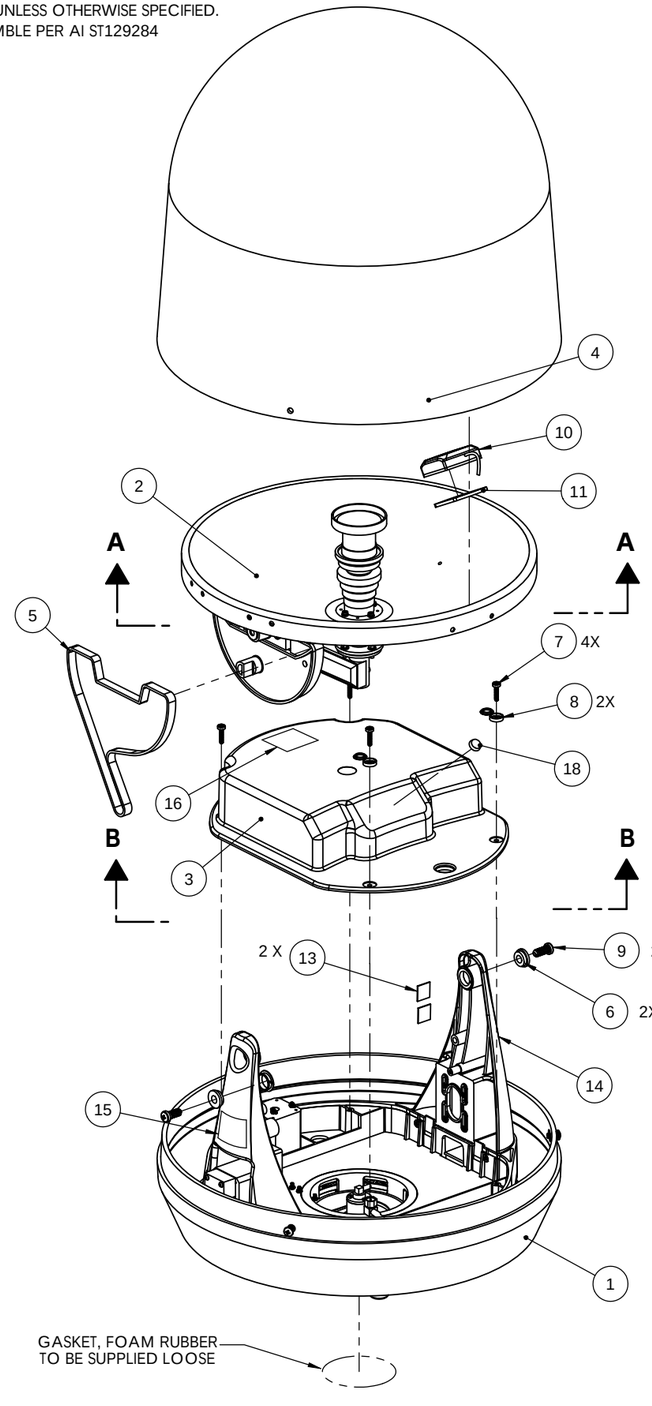
126766 SCHEMATIC, ANTENNA SYSTEM
130211 SYSTEM, ST14D

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. X.X = ±.050 X.XX = ±.020 X.XXX = ±.005 ANGLES: ±.5° INTERPRET TOLERANCING PER ASME Y14.5M - 1994	DRAWN BY: Simon L	Sea Tel COBHAM Tel. 925-798-7979 Fax. 925-798-7986	
	DRAWN DATE: 04-08-09		
	APPROVED BY: RCD	TITLE: SYSTEM, BLOCK DIAGRAM ST14D	
MATERIAL: N/A	APPROVED DATE: 6/30/09		
FINISH: N/A	SIZE: B	SCALE: NOT TO SCALE	DRAWING NUMBER: 130203 REV: A
3rd ANGLE PROJECTION	FIRST USED:		SHEET NUMBER: 1 OF 1

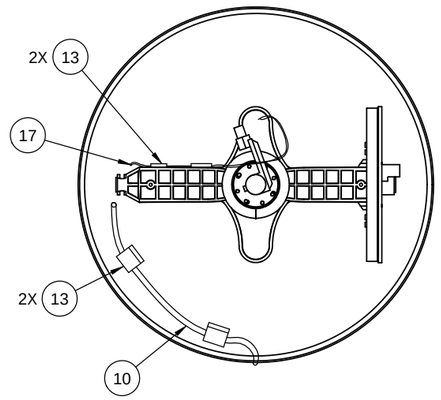
DOCUMENT NO. 124225-4_A

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Comant Industries, inc. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF Comant Industries, inc. IS PROHIBITED.

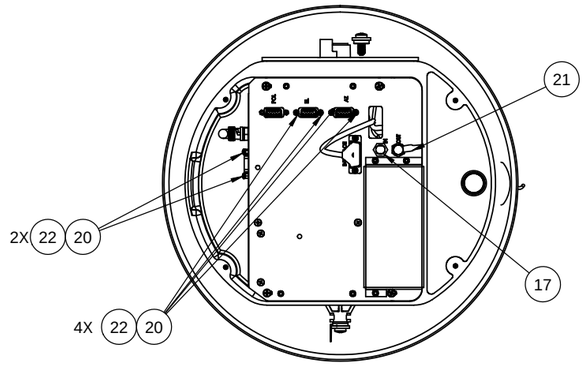
NOTES: UNLESS OTHERWISE SPECIFIED.
1. ASSEMBLE PER AI ST129284



PART No.ST129284



VIEW A-A



VIEW B-B

REVISIONS				
LTR	DESCRIPTION		DATE	APPROVAL
A	RELEASED DRAWING	MN	05/12/09	DH 05/12/09
B	REF ECN 09-037	MN	06/02/09	DH 06/03/09
C	REF ECN 09-054	MN	07/15/09	DH 7/15/09
D	REF ECN 09-060	MN	07/30/09	DH 07/30/09
E	REF ECN 09-096	MN	09/29/09	RG 09/29/09
F	REF ECN 09-105			

PARTS LIST

QTY.	ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL
6	22	ST114581-005	WASHER, SPRING LOCK, #4, S.S.	
1	21	ST110026-3	ADAPTER, F, 90 °	
6	20	ST114588-105	SCREW, PAN HD, PHIL, 4-40 x 3/16 S.S.	
	19	DELETED		
1	18	ST129272-1	BUMPER 1/2 DIA, CLEAR	
1	17	ST129002	CABLE ASSY-F(M) 90° - F (M) STRAIGHT	
1	16	ST110959-2	DECAL,MODEL & P/N, LARGE	
1	15	ST118255	LABEL,MADE IN USA	
1	14	ST117567-2	DECAL,CE CERTIFICATION, 3/4 IN.	
6	13	ST128993-1	NYLON WIRE CLIP	
2	12	ST128994-1	NYLON SHIPPING LOCK	
1	11	ST128979-3	VHB - DIECUT FOR GPS	
1	10	ST121966-6	GPS ANTENNA RETERMINATED 32"	
2	9	ST128995-1	SCREW,M8-3.5 X 19.5 REMFORM	
2	8	ST129008-1	SCREW CAP HINGED, WHITE	
4	7	ST128987-1	SCREW,M4-1.75 X 17.5MM TORX T-20	
2	6	ST128980-1	ELEVATION PIVOT	POM HOMOPOLYMER
1	5	ST116903-11537	BELT,TIMING,1/5 PITCH,115 GROOVES	230XL
1	4	ST128969-1	RADOME, TOP, 16"	
1	3	ST129288	ST14E ELECTRONICS ASSEMBLY	-
1	2	ST129285-1	ELEVATION/REFLECTOR ASS'Y	
1	1	ST129007-1	YOKE BASE ASSEMBLY	-

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS
.X ± .03 .XX ± .01 .XXX ± .005
FRACTIONS ± 1/32 ANGLES ± 1°
MACHINE FINISH 125 PER ANSI- B46.1
REMOVE BURRS AND
SHARP EDGES .015 MAX
MEET DIMENSIONS BEFORE PLATING
DIMENSIONS ARE PER ASME Y14.5M

MATERIAL :

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS		DATE
DRAWN	M.NGUYEN	5/12/09
CHECK	J.LITZINGER	5/12/09
ENGR	D.HOLLOWAY	5/12/09
MFG	J.JONES	5/12/09
QC	S.ADAMS	5/12/09

Comant Industries, Inc.

ST14E GENERAL ASSEMBLY

DWG SIZE	CODE IDENT	DWG. NO.	REV.
C	51351	**ST129284**	F

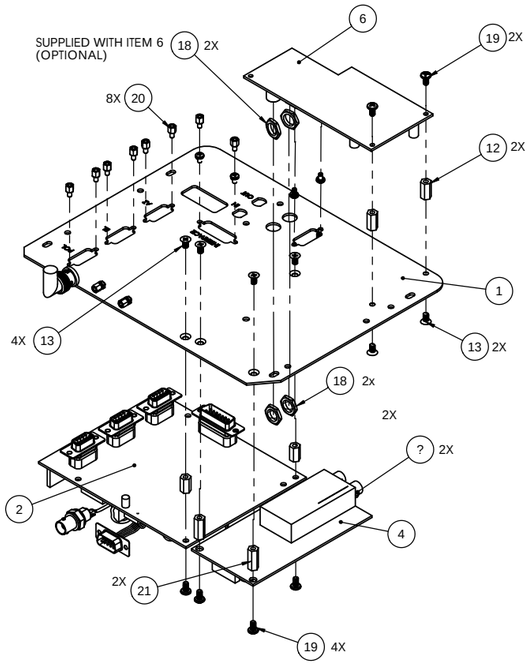
SCALE: 1:2 | CAD FILE: -- | SHEET : 1 OF 1

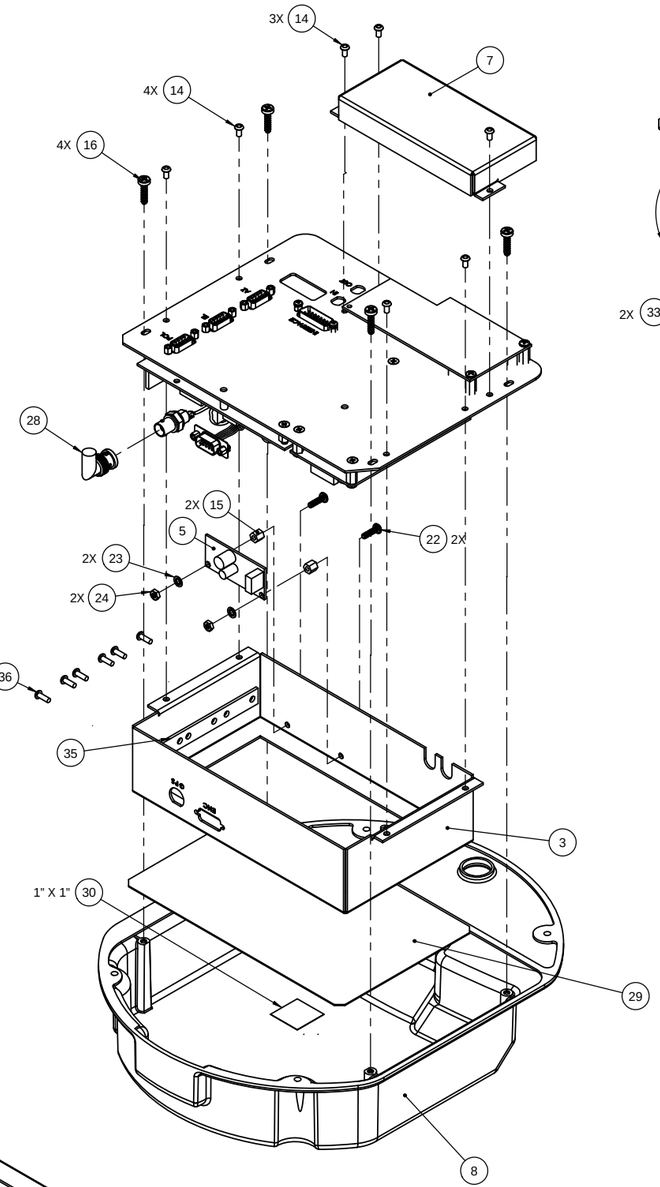
DWG NO ST129284 REV. F

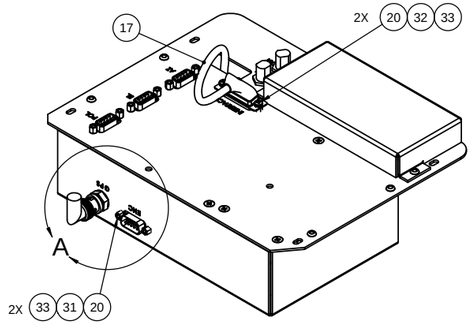
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Comant Industries, inc. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF Comant Industries, inc. IS PROHIBITED.

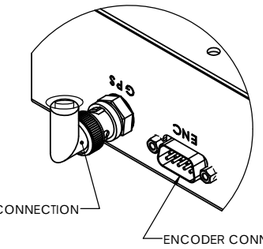
NOTES: UNLESS OTHERWISE SPECIFIED.

1. ASSEMBLE PER AI ST129288

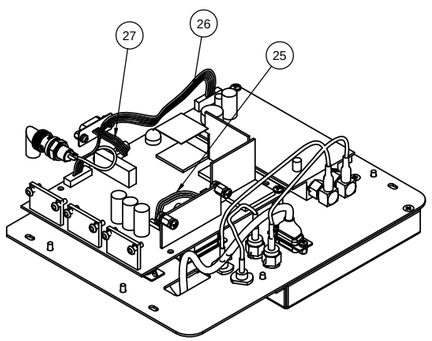


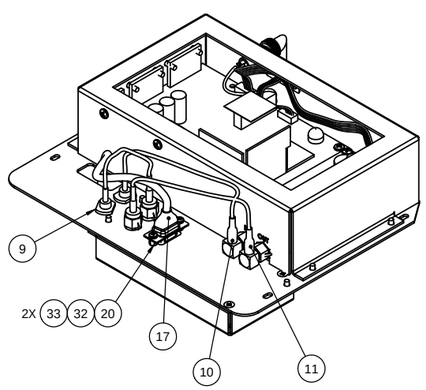






DETAIL A
SCALE 1 : 1





PART No. ST129288

REVISIONS				
LTR	DESCRIPTION		DATE	APPROVAL
A	RELEASED DRAWING		5/12/09	DH 5/12/09
B	REF ECN 09-046	MN	7/15/09	DH 7/15/09
C	REF ECN 09-069			

QTY	ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL
6	36	ST130759-1	RIVET BLIND 1/8" DIA X 3/8" LG	
1	35	ST130986	BRACKET, PCU TO BOX	
2	34	ST121228-3062	STANDOFF,HEX,F/F 6-32X .44L	
6	33	ST114581-005	WASHER, SPRING LOCK, #4, S.S.	
4	32	ST114588-105	SCREW, PAN HD, PHIL, 4-40 x 3/16 S.S.	
2	31	ST119961-005	NUT, HEX SMALL PATTERN, 4-40, S.S.	
1	30	ST124077-5024	TAPE, ADHESIVE VHB	1' x 1"
1	29	ST129276	ELECTRONICS LID PANEL	
1	28	ST129275-1	CONNECTOR, 90 DEG BNC	
1	27	ST125244-1	HARDNESS ASS'Y, ENCODER	
1	26	ST125968-2	HARNESS ASS'Y. PCU TO RECEIVER	
1	25	ST126544-2	HARNESS ASS'Y. PCU 5V	
2	24	ST119961-007	NUT, HEX, 6-32 SMALL PATTERN	
2	23	ST119952-007	WASHER, STAR, INTERNAL TOOTH #6 S.S.	
2	22	ST114588-148	SCREW,PAN HD,PHIL,6.32 X 1/2,S.S.	
2	21	ST121228-3092	STANDOFF, HEX, F/F, 6-32 X.62L	
12	20	ST110941-3	SCREW, JACK, 4-40 X 5/16	
6	19	ST114588-144	SCREW, PAN HD, PHIL 6-32 X 1/4, S.S.	
6	18	119967	NUT, HEX, PANEL, 3/8-32	(2) NUTS SUPPLIED OPT'L
1	17	ST129001	CABLE DE-9M TO DA-15F	
4	16	ST128987-1	SCREW,M4-1.75 X 17.5MM TORX T-20	
2	15	ST121228-3032	STANDOFF,HEX,F/F 6-32 X .25L	
7	14	ST129010	RIVET BLIND 1/8" DIA X 1/4"	
6	13	ST129274-1	SCREW,PHIL,FH 6-32X.25,SS	
2	12	ST121228-3072	STANDOFF,HEX,F/F 6-32X .50L	
1	11	ST128992-1	CABLE-TUNER OUT JUMPER	
1	10	ST128991-1	CABLE-TUNER IN JUMPER	
1	9	ST128990-1	CABLE-FSK OUT JUMPER	
1	8	ST128962-1	ELECTRONICS COVER,PCU	ABS
1	7	ST128973-1	ENCLOSURE,FSK	5052-H32 PER QQ-A-250/8
1	6	ST125944-1	PCB ASS'Y MODEM, FSK,ADE,ST14	
1	5	ST126248-5	PCU ASSY,DC-DC CONVERTER	
1	4	ST122307-4	DVB RECEIVER ASSY	
1	3	ST128972-1	ENCLOSURE, PCU	5052-H32 PER QQ-A-250/8
1	2	ST128981	PCU ASSEMBLY	
1	1	ST128974-1	MTG PANEL,ELECTRONICS	

PARTS LIST

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS
.X ± .03 .XX ± .01 .XXX ± .005
FRACTIONS ± 1/32 ANGLES ± 1°
MACHINE FINISH 125✓ PER ANSI- B46.1
REMOVE BURRS AND SHARP EDGES .015 MAX
MEET DIMENSIONS BEFORE PLATING
DIMENSIONS ARE PER ASME Y14.5M

MATERIAL : --

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS		DATE
DRAWN	M.NGUYEN	5/12/09
CHECK	P.PERRAULT	5/12/09
ENGR	D.HOLLOWAY	5/12/09
MFG	J.JONES	5/12/09
QC	S.ADAMS	5/12/09

Comant Industries, Inc.

ST14E ELECTRONICS ASSEMBLY

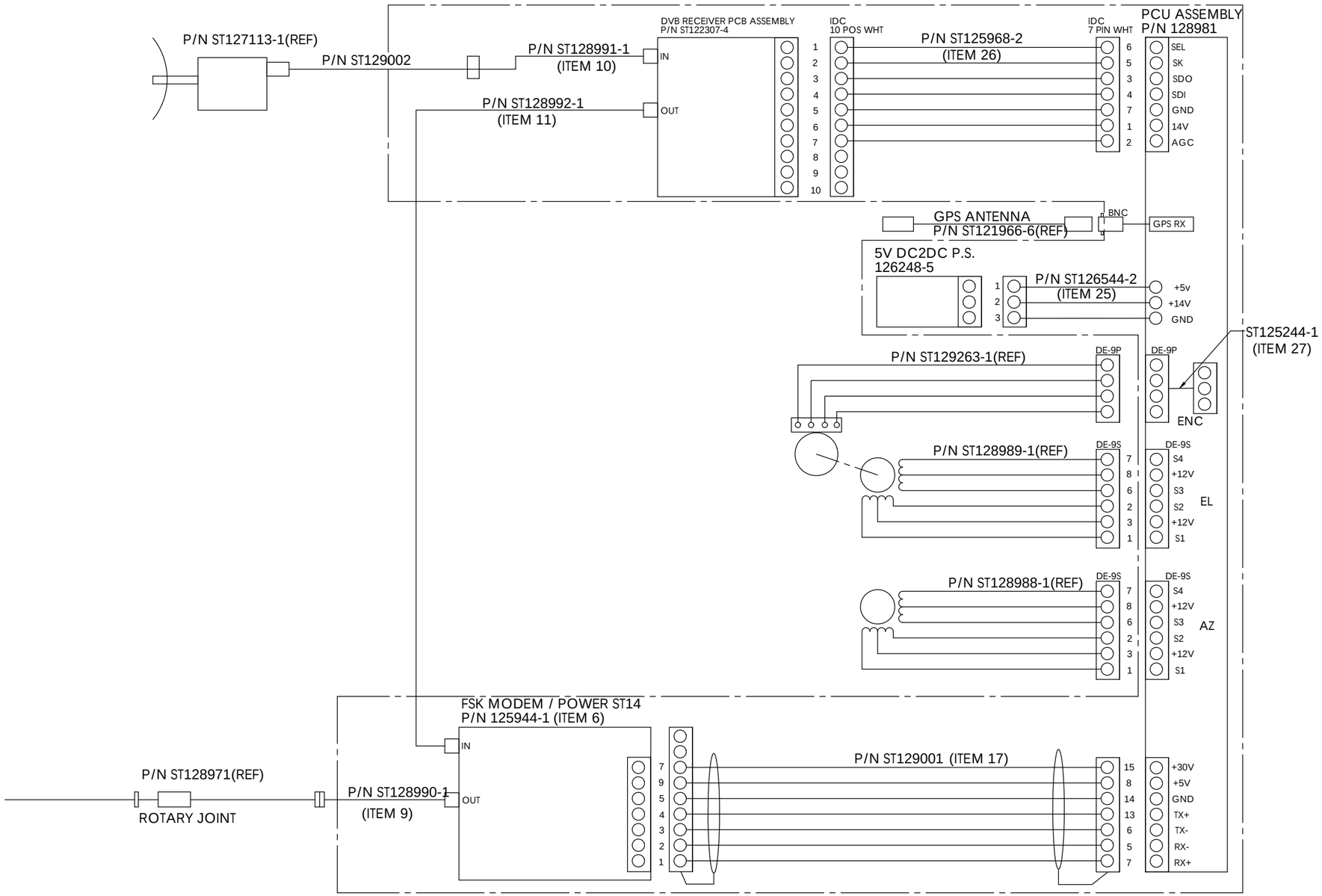
DWG SIZE	CODE IDENT	DWG. NO.	REV.
D	51351	ST129288	C

SCALE: -- CAD FILE: -- SHEET : 1 OF 2

REV C
DWG NO ST129288

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Comant Industries, inc. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF Comant Industries, inc. IS PROHIBITED.

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVAL
	SEE SHEET 1		



WIRING DIAGRAM

--	ITEM NO	PART NUMBER	DESCRIPTION	MATERIAL / SPECIFICATIONS
QTY REQD	PARTS LIST			

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS
.X ± .03 .XX ± .01 .XXX ± .005
FRACTIONS ± 1/32 ANGLES ± 1°
MACHINE FINISH 125✓ PER ANSI- B46.1
REMOVE BURRS AND
SHARP EDGES .015 MAX
MEET DIMENSIONS BEFORE PLATING
DIMENSIONS ARE PER ASME Y14.5M
MATERIAL : --
DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS	DATE
DRAWN	
CHECK	
ENGR	
MFG	
QC	

Comant Industries, Inc.

ST14E ELECTRONICS ASSEMBLY

DWG SIZE	CODE IDENT	DWG. NO.	REV.
D	51351	ST129288	C

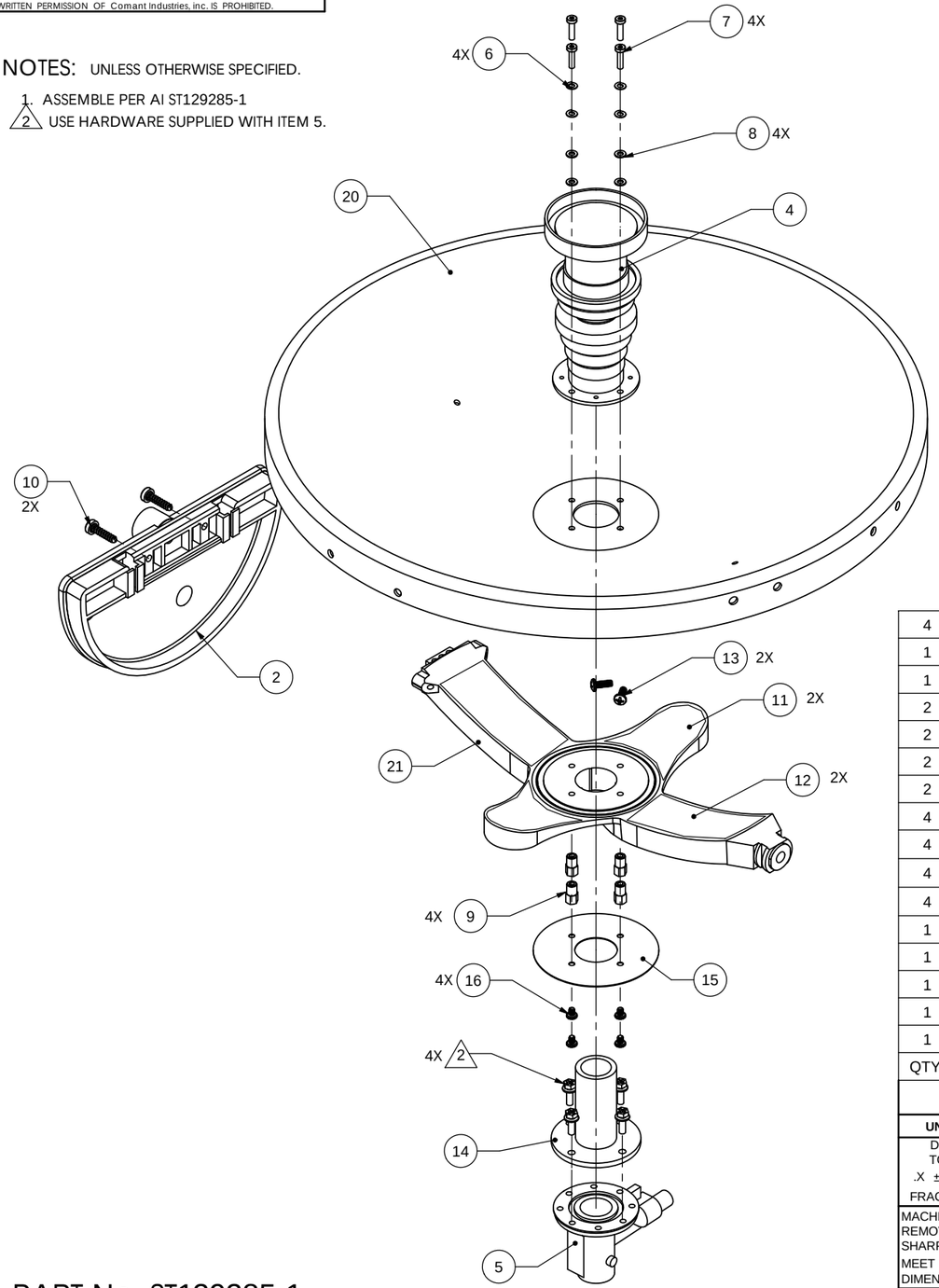
SCALE: -- CAD FILE: -- SHEET : 2 OF 2

REV. C
DWG NO. ST129288

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF Comant Industries, inc. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF Comant Industries, inc. IS PROHIBITED.

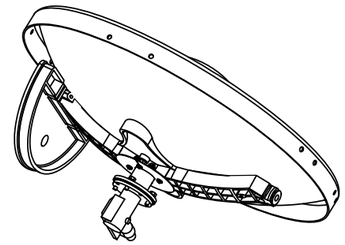
NOTES: UNLESS OTHERWISE SPECIFIED.

1. ASSEMBLE PER AI ST129285-1
2. USE HARDWARE SUPPLIED WITH ITEM 5.



PART No. ST129285-1

REVISIONS				
LTR	DESCRIPTION		DATE	APPROVAL
A	RELEASED DRAWING		5/12/09	DH 5/12/09
B	REF ECN 09-050	MN	7/01/09	DH 7/01/09
C	REF ECN 09-113			



ISO VIEW

QTY.	ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL
4	16	ST119745-113	SCREW,PAN HD,PHIL,M3 x4mm	
1	15	ST127121-1	PLATE ASS'Y, DEGREE ADJUSTMENT, POLANG	
1	14	ST122369-2	FILTER, LNB, UNIVERSAL SINGLE FLANGE	6061-T6 ALUMINUM
2	13	ST114588-146	SCREW, PAN HD, PHIL, 6-32 x 3/8, S.S.	
2	12	ST128979-1	TAPE, VHB DIECUT	3M TAPE
2	11	ST128979-2	TAPE, VHB DIE CUT	3M TAPE
2	10	ST128987-1	SCREW,M4-1.75 X 17.5MM TORX T-20	
4	9	ST129287-007	STANDOFF, HEX, 6mm x 12mm	
4	8	ST114580-210	WASHER FLAT,M3,3.2 mm	
4	7	ST129005-1	SCREW,LOW HEAD SOCKET CAP M3 SIZE	
4	6	ST114581-210	WASHER, SPRING LOCK M3	
1	5	ST127113-1	LNB, SINGLE LINEAR UNIVERSAL	
1	4	ST127245-1	FEED, 14" ANTENNA,COASTAL 14	ALUMINUM
1	20	ST125686	REFLECTOR. 14.5 INCH MACHINING	
1	2	ST128965-1	ELEVATION PULLEY	PA 6/12 43%GFR
1	21	ST128964-1	ELEVATION BRACKET	PA 6/12 43%GFR

PARTS LIST

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS
.X ± .03 .XX ± .01 .XXX ± .005
FRACTIONS ± 1/32 ANGLES ± 1°
MACHINE FINISH 125 PER ANSI- B46.1
REMOVE BURRS AND
SHARP EDGES .015 MAX
MEET DIMENSIONS BEFORE PLATING
DIMENSIONS ARE PER ASME Y14.5M
MATERIAL :
DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS		DATE
DRAWN	M.NGUYEN	5/12/09
CHECK	J.LITZINGER	5/12/09
ENGR	D.HOLLOWAY	5/12/09
MFG	J.JONES	5/12/09
QC	S.ADAMS	5/12/09

Comant Industries, Inc.

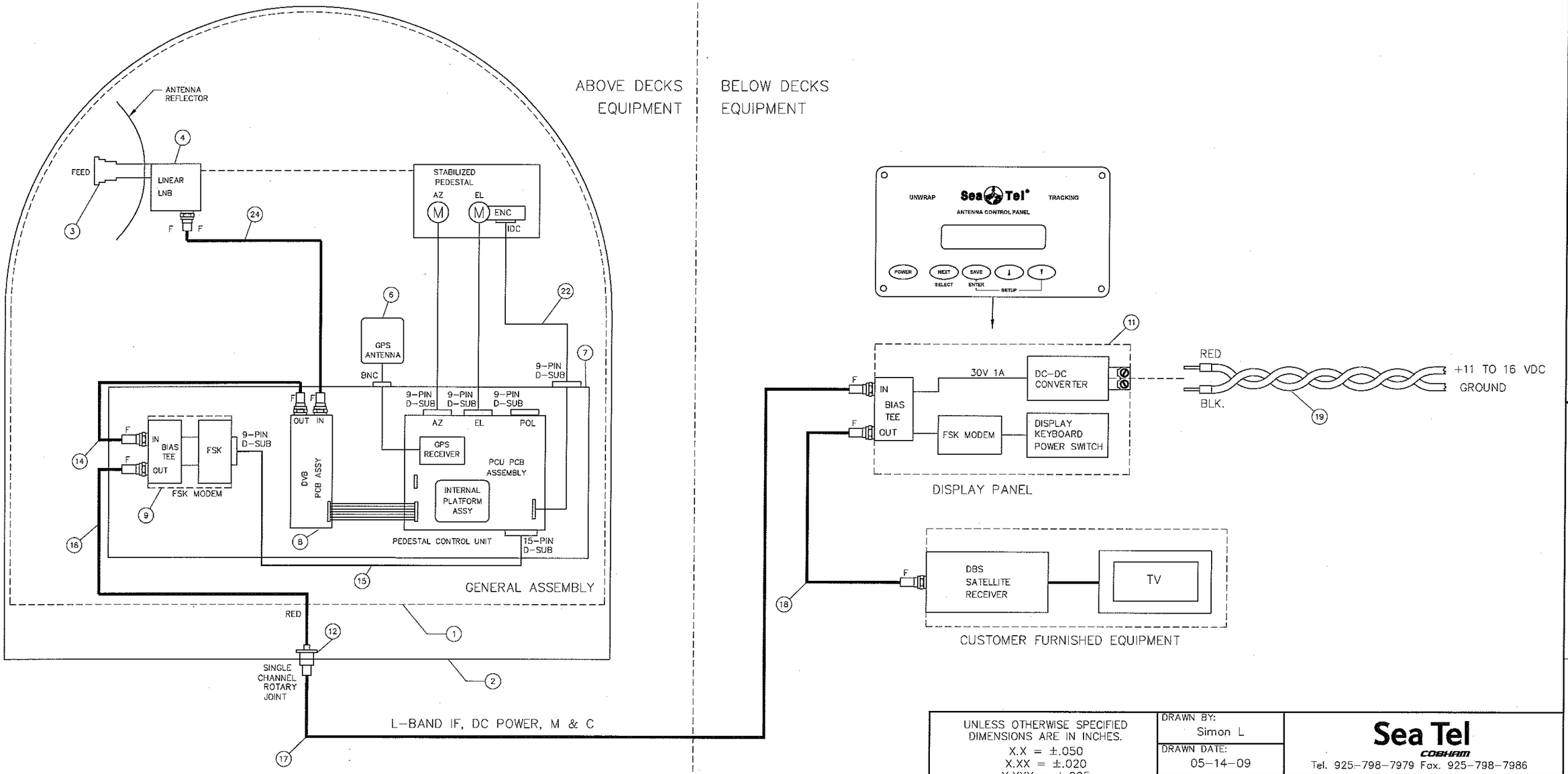
ELEVATION/REFLECTOR ASS'Y

DWG SIZE	CODE IDENT	DWG. NO.	REV.
C	51351	ST129285	C

SCALE: 1:2 | CAD FILE: | SHEET : 1 OF 1

DWG NO ST129285 REV. C

REVISION HISTORY				
REV	ECO#	DATE	DESCRIPTION	BY
A	N/A	06-30-09	LABEL "+11 TO 16 VDC WS "+12TO 60 VDC". TITLE "ST" WS "COASTAL" REV WS X1.	SL
"	"	"	INITIAL RELEASED.	SL



REFERENCE DRAWINGS

126766 SCHEMATIC, ANTENNA SYSTEM

130211 SYSTEM, ST14E

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. X.X = ±.050 X.XX = ±.020 X.XXX = ±.005 ANGLES: ±.5° INTERPRET TOLERANCING PER ASME Y14.5M – 1994	DRAWN BY: Simon L	Sea Tel COBHAM	
	DRAWN DATE: 05-14-09	Tel. 925-798-7979 Fax. 925-798-7986	
	APPROVED BY: RCD	TITLE: SYSTEM BLOCK DIAGRAM, ST 14E	
MATERIAL: N/A	APPROVED DATE: 6/30/09		
FINISH: N/A	SIZE: B / SCALE: NONE	DRAWING NUMBER: 130576	REV: A
3rd ANGLE PROJECTION	FIRST USED: ST 14E	SHEET NUMBER: 1 OF 1	